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*The Year in
Review
1989*

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**Year in Review
1989 8**



**Tanking
the
TACAMO . . 20**



**Naval Aviation in WW
II: Aviation
Training .22**

Association of Naval Aviation Bimonthly Photo Competition	21
Black Mac – A Night Fighter's Diary	28
NANews and Naval Aviation History Bid Farewell to John Elliott	34

Departments

Flight Line: Join Up and Fly Wing	1
Grampaw Pettibone	2
Airscoop	4
Naval Aircraft: E-6A	18
People–Planes–Places	32
Professional Reading	35
Weather Front	35
Flight Bag	36

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For further guidelines on submissions, contact Managing Editor, Naval Aviation News, at autovon 288-4407 or (202) 433-4407, FAX: Autovon 335-2104; (202) 475-2104.



COVERS—Front: an F-14 is reflected in a mirror near pri-fly during recovery ops aboard Enterprise. This photo by PHC Chet King won honorable mention in a 1989 bimonthly ANA Photo Contest. Back: the official 75th anniversary poster depicts people who make up the U.S. Naval Reserve, combining elements from the past and present. It was designed by Tom Book-walter, an illustrator from Manhattan, Kans.

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Join Up and Fly Wing

By VAdm. Dick Dunleavy, ACNO (Air Warfare)



Times are changing, and while we are sure we know which way (smaller budget), we are not sure how much. We do know we will see things not seen for years – significant force cuts, base closures, and consolidation of bases, to name a few. The ACNO (Air Warfare) staff will continue to pursue all possible economies with heretofore unheard of vigor.

The news media and our "grapevines" have been full of "treatments" of what is being discussed about the budget, usually in far greater numbers of words than we might want. As a result, the clarity may not always have been there.

While we know our budget is being driven downward, the picture is not as bleak as some would think. These are turbulent times for DoD, Navy, and Naval Aviation. However, our country continues to turn to Naval Aviation to do the job right, the first time, every time. The truth of these observations has been borne by the current budget/POM deliberations. While our resources will not be what we really need, they will still allow us to keep the tip of the spear sharp – if we can make some smart, timely decisions.

Some of these decisions will be difficult, more so for some people than others. Yet one thing is for certain: **EVERYONE IS GOING TO BLEED!** The results of these decisions will be equally difficult for some people. To succeed, and we can and will, we must set aside our personal interests and parochialism; we must focus on the whole of Naval Aviation, make hard choices, and *in unison, stick by them and make them work*. It is time for us all to *join up and fly wing*. Right from the start, one year ago, I have stressed the importance of Naval Aviation's speaking with one voice. That couldn't be any more important than now. Keep strokin'. ■

PH1 William Howe

Fire in the Holes

A flight of three *Harriers* was approaching the break for landing at 1,500 feet, 340 knots. A TAV-8B was in the lead with numbers two and three in single seaters, flown by "student" aviators. Two miles from the numbers the lead *Harrier* pilot heard the master caution tone and noted that the yellow electronic fuel control caution light was on. (This light indicates that one of the digital engine control units has failed. Design calls for the other unit to automatically assume control.)

The pilot immediately realized that, under these circumstances, Naval Air Training and Operating Procedures Standardization calls for a landing as soon as practical. He asked the copilot to read him the procedure from the pocket checklist. The pilot decided to modify the break in a gentle turn downwind and did so, reducing power slowly.

Number two emulated lead's turn, five seconds later. At the 90-degree point, lead's copilot confirmed the procedure to land as soon as practical. The pilot then saw the red jet pipe

temperature limit warning light on. The heads-up display indicated an overtemp of 988 degrees.

The pilot experienced a minor

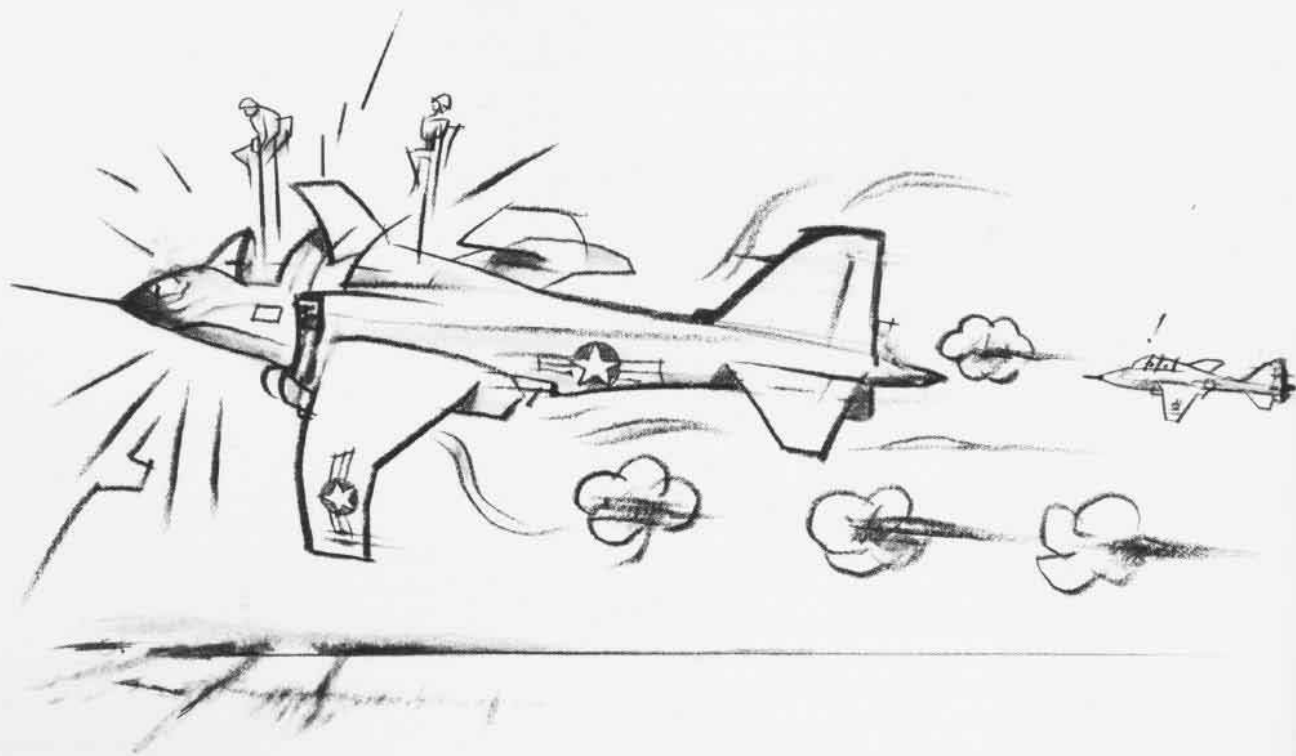
change in feel and thrust of the engine without any unusual noises. He leveled the wings and made an inadvertent ultra-high frequency transmission, which caught the attention of the second *Harrier* pilot. He alertly looked at lead and saw flashes of flame emanating from the hot nozzles. The flames appeared as four large orange and black cotton balls, lasting about four seconds.

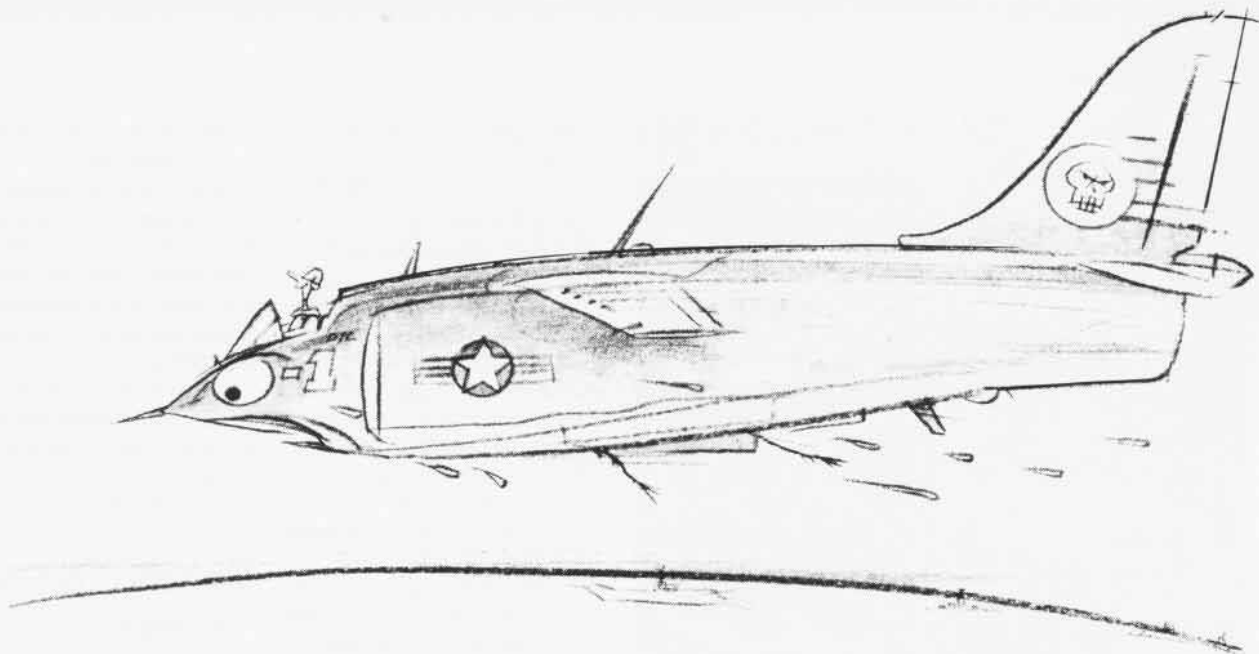
The wingman told lead about the flames and lead assumed he was on fire. To his copilot, lead said, "Get ready, we're going to get out." After three seconds – the *Harrier* traveling at 240 knots – the lead pilot initiated command ejection. Both fliers had good chutes, landed in a river, and were rescued about 20 minutes later. The aircraft flew for about one minute before crashing in the river.



Grampy Pettibone says:

When you're hot, you're hot – and ya gotta go! Even though the *Harrier* flew all by its lonesome without pilots for a minute, these guys had no choice. The cockpit lit





up – except for the fire warning light – and the wingman talked flames. It was decision time. The pilot smartly steered away from a housing area and punched out overwater.

The wingman did right, too, actin' quick like. Trouble is, an extra word or two in the right place and everybody, plus the bird, mighta stayed dry. It's all second guessin' but what if the wingman was to add "the flames have gone out," which they had. The ejection decision mighta been deferred and maybe the pilot coulda got the *Harrier* down.

Ole Gramps can't fault anyone, though. Number two had limited experience but the right instinct.

Never Turn Back?

The French say that the more things change, the more they stay the same. Testimony to this philosophy appeared in Naval Aviation News, June 1979:

Shortly after takeoff from an East Coast AFB en route to Home Plate, an AV-8 experienced an AC/DC failure. The pilot promptly secured all electrical equipment except for the No. 1 and No. 2 batteries. He contacted the AFB on guard frequency and requested clearance direct to Home Plate, 500 miles away. This request was approved.

During the ensuing climb to altitude, the pilot noted a fuel transfer caution light with a simultaneous fuel gauge drop to 300 pounds. These indications reflect loss of fuel-system bleed air pressure. The pilot interpreted these two warnings as faulty indications.

Flight duration at this point was approximately 13 minutes. The pilot elected to continue visual flight rules to Home Plate. Thirty to 45 minutes later, the caution warning panel lights began to dim and two of four landing gear indicators went from a safe to an unsafe indication. These developments are indicative of near exhaustion of the No. 1 and No. 2 batteries.

After one hour and 13 minutes total flight time, the aircraft's engine flamed out. The flameout was caused by fuel feed tank unbalance and subsequent cavitation. Numerous relight attempts were unsuccessful. The pilot ejected successfully and was rescued without further incident.



Grampaw Pettibone says:

Great Jumpin' Jehoshaphat! This throttle pusher was really boresighted on getting home. With control shifted to the seat of his pants and experiencing an emergency, this aerial jockey continued his flight toward Home Plate and overflew at least 11 suitable landing fields before

flaming out!

When you assume that your experience level in the air makes you immune to accidents, you become a candidate for the Deep Six or the wrong end of the long green table. Nuff sed!

From Gramps' "IN" Basket

A NOTAM (notice to airmen) had closed the field from 0800 to 1000. During a base-wide foreign object damage (FOD) walkdown in that timeframe, while personnel were walking over the parallel taxiway toward the north-south runway, an Air Force passenger aircraft landed and taxied to base ops. A VIP (Code 3) disembarked and subsequently boarded a helicopter which departed over the personnel conducting the FOD walkdown. Why was the aircraft allowed to land when the field was closed?



Grampaw Pettibone says:

Good question! Maybe whoever OK'd the landing and/or somebody in that helo oughta come back, get with the pack, and help with the FOD walkdown.

SH-60F Preps for Sea



Sikorsky Aircraft

HS-2 became the first operational squadron to receive the Sikorsky SH-60F *Seahawk*, delivered in ceremonies at NAS North Island, Calif., on March 27.

Completing transition from the Sikorsky SH-3H *Sea King*, HS-2 will commence workups with the new inner-zone antisubmarine warfare helicopter when it takes its six SH-60Fs aboard *Nimitz* in July as part of CVW-9. The *Golden Falcons*, commanded by Cdr. Morton E. McCarthy, will take the SH-60F on its first deployment next year aboard *Nimitz*.

Pilot Visual Entry Standards Modified

New visual acuity standards for personnel becoming student Naval Aviators will go into

effect July 1, 1990, as approved recently by the Chief of Naval Operations (CNO). The entry standard will change from 20/20 to 20/30 (correctable to 20/20).

CNO has established policy for the new standard, which will apply only to applicants who meet the following guidelines: Naval Academy and NROTC midshipmen who apply for pilot training via the service selection process on or after July 1; pilot candidates accessed by the recruiting command who sign contracts on or after July 1; and commissioned officers whose applications for pilot training are received by Commander, Naval Military Personnel Command on or after July 1.

Enlisted Aviation Ratings Change

Sailors rated as aviation support equipment technicians with subspecialties in electrical (ASE) and hydraulic (ASM) systems merged to form the AS general rating effective January 1, 1990. The reorganization is designed to provide opportunities for gaining technical expertise in electrical, mechanical, and hydraulic skills for E-1 through E-5 AS personnel and to improve the Navy's overall operational readiness. The merger does not change the number of billets, Navy Enlisted Classification codes, Selective Reenlistment Bonuses, or advancement opportunities.

The aviation fire control technician (AQ), aviation electronics technician (AT), and aviation antisubmarine warfare technician (AX) ratings have been merged into two new ratings: avionics maintenance technician (AV) and aviation electronics tech-

nician (AT). In the new ratings, which range from E-1 to E-9, AVs will perform organizational-level preventive and corrective maintenance on aviation electronics systems, while ATs will perform intermediate-level preventive and corrective maintenance on aviation electronic components supported by conventional and automatic test equipment. The merger is expected to be complete by 1991.

Squadrons Slated for Japan

Three Navy squadrons will transfer to new home ports in Japan in 1991 in conjunction with the planned replacement of *Midway* by *Independence*. The squadrons will join CVW-5, which will transfer to *Independence* upon her arrival at her new home port of Yokosuka.

VFs 21 and 154, presently based at NAS Miramar, Calif., will become the first F-14 squadrons to be home-ported in Japan. VS-21, an S-3A unit at NAS North Island, Calif., will transition to the S-3B prior to its transfer to Japan. These aircraft types are not part of *Midway's* complement, which includes the F/A-18A as its only fighter, and has no fixed-wing antisubmarine warfare aircraft.

No announcement has been made as to which CVW-5 squadrons may transfer from Japan as part of this reorganization.

Final USN P-3 Delivered

Lockheed Aeronautical Systems Company formally delivered the last P-3 *Orion* built for the Navy in a ceremony held on April 17 at

Palmdale, Calif. The aircraft, BuNo 163925, is the 548th P-3 accepted by the Navy since deliveries began in 1962.

The ceremony was attended by many past and present officials associated with the development and operation of the *Orion*. Some were flown to Palmdale in the first production P-3, UP-3A BuNo 148883, which is still in service at Naval Air Development Center, Warminster, Pa. RAdm. R. K. Chambers, Chief of Naval Air Reserve, accepted the new P-3C for the Navy.

Six more *Orions* or derivatives are in production — three P-3C Update II.75 versions for Pakistan and three CP-140A *Arcturus* derivatives of Canada's CP-140 *Aurora* — with the possibility of more orders from a foreign nation. Lockheed has delivered 85 others to foreign nations, as well as two to the U.S. Department of Commerce.

Lockheed Aeronautical Systems Company



RAdm. B. E. Tobin, Commander, Patrol Wings, Atlantic, presents a letter from President George Bush, recognizing delivery of the final Navy P-3, to E. Lloyd Graham, Executive VP, Lockheed Aeronautical Systems Company.

ASW Ends for P-3A

The last antisubmarine warfare (ASW) mission conducted by a Navy P-3A *Orion* was flown over the Atlantic March 22 by a crew from VP-64, a reserve squadron based at NAS Willow Grove, Pa., ending an almost 28-year ASW career for the aircraft type.

P-3A BuNo 152158 flew the last mission from Rota, Spain, where VP-64 was deployed for its annual active duty training. In recognition of the historic event, the aircraft was decorated in VP-64 tail markings with approval of the Chief of Naval Air Reserve. Unit markings were removed from most patrol aircraft starting in 1986 for operational security.

VP-64 is transitioning to the P-3B along with VPs 66 and 69, and by September all antisubmarine "Alpha's" will be retired. (See *NANews*, March-April 1990, pages 8-9.)

VT-10 Resumes AIO Course

After a hiatus of 10 years, air intelligence officer students will receive aviation familiarization instruction at NAS Pensacola, Fla., from VT-10, the basic Naval Flight Officer training squadron.

Approximately 60 students will undergo the Naval Air Intelligence Officers Course annually, which will involve ground and flight instruction to familiarize the officers with aeronautical terminology, in-flight procedures, and the aeronautical environment that affects Naval Aviation personnel. The main goal of the course is to produce an officer better able to function as an intelligence officer in an aviation squadron.

The course of instruction at VT-10 is similar to one that was discontinued 10 years ago, and includes 10 to 13 weeks of ground training, two simulator sessions, and five flights in the T-34C *Turbo-Mentor*. The students receive intelligence training at the Navy/Marine Corps Intelligence Training Center, Dam Neck, Va., following completion of training at VT-10.

VAQ-209 Changes Port and Plane

VAQ-209 has moved from NAS Norfolk, Va., to NAF Washington, D.C., as it transitions from the EA-6A *Intruder* to the more capable EA-6B *Prowler*. The transition will mark a significant upgrade in war-fighting ability for CVWR-20, for which VAQ-209 provides electronic warfare capability.

The transition also marks the retirement of the EA-6A from the Naval Air Reserve. VAQ-209 transferred its EA-6As to VAQ-33, an active-duty electronic warfare aggressor squadron based at NAS Key West, Fla. The EA-6A also remains in service with VMAQ-4, a Marine Corps reserve unit at NAS Whidbey Island, Wash.

Phantoms Fade from Mugu

The last F-4 *Phantom II* in Navy squadron service was recently retired from Point Mugu, Calif., as was the last F-4J in Navy service, leaving only QF-4 drones currently flying for the Navy.

VX-4, which operated the *Phantom II* at Point Mugu since 1961, retired F-4S BuNo 158360, which was famous for

Bell Boeing



Wearing Marine Corps camouflage, the fourth prototype Bell Boeing V-22 Osprey (BuNo 163914) lifted off for the first time on December 21, 1989, from Boeing Helicopter's flight test center at the Greater Wilmington Municipal Airport. This marked the beginning of V-22 flight testing at Boeing's facilities in Delaware. The first two V-22s currently are being flown at Bell Helicopter Textron's Flight Research Center, Arlington, Texas.

its glossy black paint scheme and Playboy bunny logo. The scheme was originally used in 1969 in night visual acuity experiments and was treated with an experimental anticorrosive preservative. "Vandy One," as the plane was called, was used for various development projects.

On February 25, the Pacific Missile Test Center, also at Point Mugu, retired its last non-drone *Phantom II*, BuNo 153074, called "Bloodhound 90," which was also the last F-4J in Navy service. (Most were upgraded to the F-4S configuration.) Bloodhound 90, delivered on December 9, 1966, spent its entire 24-year career in test and development roles, mostly at Point

Mugu. It will end its days in barricade testing at Naval Air Engineering Center, Lakehurst, N.J.

The *Phantom II* will continue to serve at Point Mugu and at Naval Weapons Center, China Lake, Calif., as a target drone in the QF-4N and QF-4S configurations. NWC China Lake also maintains in storage a specially configured YF-4J, available to test ejection seats if necessary. The last active Marine *Phantom II* unit, VMFP-3 at MCAS El Toro, Calif., will be deactivated later this year, leaving only two reserve squadrons, VMFA-321, NAF Washington, D.C., and VMFA-112, NAS Dallas, Texas, operating the F-4 for the Corps.

NADC-developed Tactical Helmets Tested

Innovations of lighter, more durable materials have made cumbersome tactical aircraft helmet assemblies outdated. Previously constructed of fiberglass, helmet shells can now be made of materials such as Kevlar and nylon with graphite epoxy, which are much lighter while still providing equal or greater protection. Helmets of these materials are being developed and tested at the Naval Air Development Center, Warminster, Pa.

Besides lighter materials, other improvements include an integrated chin/nape strap of nylon webbing designed to enhance stability while under high Gs and retention during ejection, a chemically fit liner system, crushable earcups, and new visor assemblies.

Four versions of the tactical air helmet replacement are being tested by tactical aircrews. A final version is expected to be in service by the end of FY 91.

In Brief...

- **VA-205** at NAS Atlanta, Ga., gave up its last A-7E *Corsair II* in April as it transitions to the A-6E and KA-6D *Intruders*, leaving VA-204 at NAS New Orleans, La., as the Naval Air Reserve's last A-7 squadron.
- **VA-22** was redesignated VFA-22 in a ceremony held at NAS Lemoore, Calif., May 4 as it transitions from the A-7E to the F/A-18C.
- **VP-6**, NAS Barbers Point, Hawaii, has transitioned from the P-3B to the P-3C Update II.5, leaving VP-22 the last



VX-4's black F-4S "Vandy One" retired as the last Phantom II in Navy squadron service.

Cdr. R. P. Mannel



LCdr. Larry Young (left) and Lt. Stan Jacobsen prior to flying away "Bloodhound 90," ending the F-4J's long career at PMTC.

fleet "Bravo" squadron.

- **HS-85**, NAS Alameda, Calif., the Navy's last SH-3D squadron, is trading its "Delta's" for SH-3Hs.

- **Lockheed** will shift production of the **P-7A** from Palmdale, Calif., to Marietta, Ga.

- **VMFA(AW)-121** took delivery of its first F/A-18D on May 11, introducing the night-attack version into operational service.



LCdr. Rick Burgess

A pylon-mounted Grumman F-14A Tomcat was dedicated May 10 in a ceremony at the National Museum of Naval Aviation at NAS Pensacola, Fla. The only F-14 on public display in the world, BuNo 157984 was the fifth one built and served its entire life as a development aircraft. It will bear the markings of VF-21 for the next five years.



LCdr. Rick Burgess

The "Ageless Warrior," Coral Sea (CV-43), was decommissioned in a ceremony at Norfolk, Va., on April 30, attended by some 3,000 crew members, former crew members, dignitaries, and guests. Chief of Naval Operations Adm. C. A. H. Trost delivered the farewell speech. (See NANEWS, March-April 1990, for a tribute to Coral Sea.)



In 1989 – as the decade of the eighties drew to a close – political unrest, racial tension, cries for freedom, democratic revolution, drug abuse, and environmental disaster were the topics that dominated the headlines. The news of a continuing detente between the Soviet Union and the United States was met with optimism in both the East and West. Chief of Naval Operations Admiral C. A. H. Trost, however, cautioned that the Soviet Union, a self-sufficient land power, could better afford a reduction of its naval forces than could the U.S., a maritime nation that depended on the seas for a link with

The Year in Review *1989*

By Judith A. Walters and Gwendolyn J. Rich

1989 marked the replacement of Coral Sea (above) with the newest Nimitz-class nuclear carrier, Abraham Lincoln (right), seen here with NATC Strike Directorate aircraft aboard for trials.



its allies and commercial partners.

For Naval Aviation, 1989 – its 78th year – began with hostilities between the United States and Libya. Navy pilots on a routine mission were approached by Libyan jets, and attempts for a peaceful interception ended in the shooting down of the Libyan aircraft.

The revolutionary tilt-rotor V-22 *Osprey* made its first flight in both helicopter and full airplane modes. But fiscal constraints decreased the funding for the V-22 and the F-14 and forced the early decommissioning of the aircraft carrier *Coral Sea*. Two new aviation ships, however, were

commissioned: *Abraham Lincoln*, the Navy's largest *Nimitz*-class, nuclear-powered aircraft carrier, and *Wasp*, the first of a new class of multipurpose amphibious assault ships.

Although the Navy recorded its second lowest number of major accidents in the decade, the year brought U.S. naval accidents to the front page. Naval Aviation units responded to a call for assistance from *Iowa* because of an explosion in the battleship's number two gun turret. After a series of unrelated naval accidents, a 48-hour safety standdown was ordered.

Natural disasters also struck in 1989. Aviation squadrons brought as-

sistance to victims of both Hurricane Hugo and the earthquake in northern California.

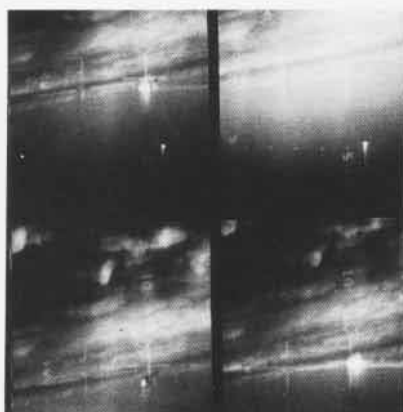
NASA's space program conducted several space shuttle missions with Navy personnel onboard. By the end of the year, the launch rate was close to what it had been before the 1986 *Challenger* accident.

The year ended with the aircraft carriers *Enterprise* and *Midway* being placed on alert status off the Philippines in response to a coup attempt against the Aquino government.



January

04 Two F-14A *Tomcats*, flown by crews from VF-32 of NAS Oceana, Va., downed two hostile Libyan MiG-23 aircraft in the central Mediterranean north of the Libyan port of Tobruk over international waters. The squadron was deployed with CVW-3 aboard *John F. Kennedy*, which had been participating in routine training exercises off the northeastern tip of the Libyan coast when the group was approached by the two *Flogger* jets from the Al Bumbah air base. After repeated attempts for a peaceful intercept, the VF-32 *Swordsmen* fired both AIM-7 and AIM-9 missiles, downing one MiG with each missile.



Views of Libyan MiG from F-14 cockpit.

09 HM-19, the Naval Reserve's first West Coast helicopter mining squadron, was established at NAS Alameda, Calif., with Cdr. Robert M. Davis at the helm. Nicknamed the *Golden Bears*, it is equipped with the RH-53D *Sea Stallion*.

20 George Bush, former Naval Aviator, was inaugurated as the 41st President of the United States during an outdoor ceremony at the Capitol. As a member of Torpedo Squadron 51 during WW II, Bush was shot down while operating a TBM *Avenger* in the Pacific.

26 The model designation BQM-74E was approved for the subscale, subsonic aerial target drone which has a new turbojet engine and a significant increase in available thrust. The new drone can be surface or air launched, recovered on land or water, and is controlled from ground or preprogrammed prior to launch.

February

04 The VP-45 *Pelicans* repositioned to NAS Bermuda, marking the first operational deployment of a P-3C Update III squadron in the Atlantic.

06 The name *Boxer* was authorized by Secretary of Defense William L. Ball III for LHD-4, the Navy's new amphibious assault ship approved for construction at Ingalls Shipbuilding in Pascagoula, Miss., and tentatively scheduled for commissioning in Spring 1994.

23 The Navy's Mid Infrared Advanced Chemical Laser/Sea Lite Beam Director (MIRACL/SLBD) experimental high-energy laser system destroyed a *Vandal* supersonic missile in a test conducted at the White Sands Missile Range, N.M. This was the first time a high-energy laser system successfully engaged and destroyed a *Vandal* missile, flying low and fast in a cruise missile profile. The MIRACL/SLBD system was designed to show that a laser could acquire, track, and focus enough energy on a supersonic target to destroy it.

March

19 The V-22 *Osprey* tilt-rotor aircraft made its first flight at Bell Helicopter Textron's Flight Research Center, Arlington, Texas. The aircraft reached a maximum speed of 20 knots and an altitude of 30 feet during a 15-minute flight in the helicopter mode, which initiated phase one of flight tests. The V-22 is the first modern weapons system designed from conception to meet the requirements of all four U.S. armed services.

22 The Navy's astronaut selection board completed its review of 134 applicants for the National Aeronautics and Space Administration (NASA) space shuttle astronaut program during which 16 pilots and 18 mission specialists were selected. The results were forwarded to NASA for further consideration and final selection.

31 VP-62 completed transition to the P-3C Update III, the newest production *Orion*, marking the first time in reserve patrol history that a reserve squadron received the latest state-of-the-art aircraft.

April

03 An A-6E modified with a new composite wing made its first flight at Wichita, Kans. Manufactured from graphite/epoxy composite materials, the new wing is stronger than the original metal wing on the *Intruder*. Grumman Aircraft Systems Division will install the wings on its newly manufactured A-6s. The new wings will be installed by Navy depots on the older A-6s.

16 The VS-30 *Diamondcutters* became the first fleet S-3 squadron to fire a *Harpoon* antiship missile. The launch resulted in a direct hit on the target by a detachment assigned to VS-30 as it participated in exercise *North Star '89* aboard *America* (CV-66).

19 While operating in the Caribbean, *Coral Sea* (CV-43) responded to a call for assistance from *Iowa* (BB-61) due to an explosion in the battleship's number two gun turret in which 47 crew members were killed. The *Coral Sea's* explosive ordnance disposal team removed volatile powder charges from the ship's 16-inch guns and flooded powder magazines. The carrier also dispatched a surgical team and medical supplies. VC-8, using SH-3G helicopters, also performed medevac and logistical support to *Iowa*.

24 The Office of Assistant Secretary of Defense announced a contract moving the Navy Advanced Tactical Fighter (NATF) into Phase II, which will include further refinement of the NATF baseline design and systems specifications to meet Navy requirements. The NATF is the Navy's proposed replacement for the F-14D.

25 Secretary of Defense Richard Cheney sent his amended budget to Congress. The budget eliminated fund-



ing for the V-22 *Osprey* and the F-14D *Tomcat*. (See November 21 entry.)

26 *Lexington* (AVT-16) departed her home pier of 27 years for a temporary berth at the Port of Pensacola. The training carrier will operate from its new location until the arrival of *Kitty Hawk* (CV-63) scheduled for home-porting at Pensacola in 1991. *Lexington* will then depart for her new permanent home at NAS Corpus Christi, Texas. The temporary berthing was necessary so that work could proceed on deepening the berth space for *Kitty Hawk*.

May

01 The Naval Air Systems Command awarded a contract to the McDonnell Douglas Corporation, McDonnell Aircraft Company, St. Louis, Mo., to upgrade F/A-18 training systems to a night-attack configuration.

04-08 The orbiter *Atlantis* left the Kennedy Space Center's Pad 39B with Navy Capt. David M. Walker in command of shuttle mission STS-30. During the mission, *Atlantis* launched Magellan, a radar mapping spacecraft, designed to peer through the clouds covering Venus and produce detailed maps of the planet's surface.

09 The Navy announced the names of 14 new ships authorized for construction, including the aircraft carrier *United States* (CVN-75). Two other ships, *John S. McCain* (DDG-56) and *Mitscher* (DDG-57), were named after WW II Naval Aviators.

15 H. Lawrence Garrett III was sworn in as the 68th Secretary of the Navy and succeeded William L. Ball III. Secretary Garrett was commissioned as a Naval Aviation Cadet in 1964 and served as a Naval Flight Officer with VP-50 in Vietnam.



F-14 Tomcat



JO1 Jim Richeson

Adm. Hardisty, left, relieves VAdm. Dunn as Gray Eagle aboard Saratoga.

25 VAdm. Richard M. Dunleavy assumed the duties of Assistant Chief of Naval Operations (Air Warfare) when he relieved VAdm. Robert F. Dunn in a ceremony aboard *Saratoga* (CV-60). In the same ceremony, VAdm. Dunn retired and Adm. Huntington Hardisty, Commander in Chief, U.S. Pacific Fleet, became Naval Aviation's 39th Gray Eagle.

June

22 HS-10 accepted the Navy's first SH-60F CV-Helo inner zone antisubmarine warfare aircraft during a ceremony at NAS North Island, Calif. Later in October, HS-10 became the Navy's only SH-60F fleet readiness squadron when it transferred all SH-3 training to HC-1 and HS-1.

24 The first development free-flight test of a Standoff Land Attack Missile (SLAM) resulted in a direct hit against a simulated surface-to-air missile communication site at San Nicholas Island, Pacific Missile Test Center Range, Calif. The carrier-based aircraft missile was launched from an A-6E (SWIP) *Intruder*. During its flight it was controlled from an F/A-18 *Hornet* using the Walleye data link for man-in-the-loop control. SLAM is a derivative of the *Harpoon* missile system, manufactured by McDonnell Douglas.

28 The House Armed Services Committee recommended that the Navy's F-14D *Tomcat* and Marine Corps V-22 *Osprey* be restored to the 1990 budget. (The full House must approve the proposed budget and the full Senate must pass a similar package

before a final authorization may be sent to the president for signature.)

30 *Theodore Roosevelt* (CVN-71), with CVW-8 embarked, completed her first major deployment upon arrival at NAS Norfolk, Va., after six months in the Mediterranean. The carrier participated in several joint exercises and made 11 port visits, which included Israel, Spain, France, Italy, Egypt, Turkey, and Morocco.



Theodore Roosevelt (CVN-71) returns from six-month Med deployment.

July

01 RAdm. Richard H. Truly, serving as the Associate Administrator for Space Flight, Office of Space Flight, National Aeronautics and Space Administration, retired from the Navy and was confirmed by Congress as the administrator of NASA. A Naval Aviator, RAdm. Truly was selected as an astronaut in 1965 and is credited with bringing U.S. backing into an active space program after the shuttle *Challenger* accident.

01 The Naval Aviation Museum officially changed its name to the National Museum of Naval Aviation.

06 Ground-breaking ceremonies were held at NAS Pensacola, Fla., for the Al-

legheny Pier in preparation for the arrival of *Kitty Hawk* in 1991.

08 HCS-5, NAS Point Mugu, Calif., accepted the first Sikorsky HH-60H strike rescue and special warfare operations helicopters. The HH-60H is the first aircraft to be produced specifically for the Naval Air Reserve.



HH-60H Seahawk

11 The Naval Air Systems Command awarded the McDonnell Douglas and Hughes Aircraft team a contract for the Advanced Interdiction Weapon System (AIWS). The AIWS is a low-cost, highly capable, multipurpose family of air-launched weapons designed for short-to-medium range standoff missions.

19 Jul-10 Dec *Unitas XXX* began with VP-5 and detachments of HSL-32 participating in the annual exercise planned and conducted by the U.S. and participating South American navies. The five-month exercise, which includes at-sea operations with the navies of various countries as the task force circumnavigates South America, was completed on December 10.

22 Naval Aviator #33 Adm. Marc A. Mitscher was enshrined in the National Aviation Hall of Fame. In 1919 Mitscher commanded the NC-1, one of the three seaplanes that attempted the first airborne transatlantic crossing. Only NC-4 was successful. In 1928 Mitscher made the first takeoff and landing on *Saratoga* in a Vought UO-1. His distinguished service during WW II included command of *Hornet*; Patrol Wing 2; Fleet Air, Noumea; and units of the U.S. Army Air Force, Navy and Marine Corps aviation groups, and contingents of the Royal New Zealand Air Force. Of particular sig-



Adm. Marc A. Mitscher

nificance was his command of Task Force 58. Mitscher received many citations for his wartime service.

29 The amphibious assault ship *Wasp* (LHD-1) was commissioned at Naval Base, Norfolk, Va., with Capt. Leonard F. Picotte at the helm. LHD-1 is the first of a new class of multipurpose amphibious assault ships.



Wasp (LHD-1)

August

01 The carriers *Coral Sea* (CV-43) and *America* (CV-66) departed early from separate port visits when they were diverted to the eastern Mediterranean as a show of force in wake of the suspected hanging of Marine Lt. Col. William R. Higgins by Middle East terrorists, and threats to other hostages. Lt. Col. Higgins had been kidnapped in February 1988 while a member of the United Nations peacekeeping forces in Lebanon. *Midway* (CV-41), operating with Battle Group Alfa, was originally scheduled to participate in *PACEX 89* but instead was repositioned to fill the carrier commitment in the Indian Ocean. The carrier remained on station in the North Arabian Sea until mid-October, extending its deployment by one month.

03 *Ranger* (CV-61) rescued 39 Vietnamese refugees, adrift for 10 days on a barge in heavy seas and monsoon rains in the South China Sea, about 60

miles from NAS Cubi Point, R.P. SH-3s from HS-14 assisted. An A-6 from VA-145 spotted the barge, which had apparently broken loose from its mooring near a small island off the coast of Vietnam with 10 men on-board. Twenty-nine other refugees from a sinking refugee boat climbed aboard the barge when it drifted out to sea. After examination by medical personnel, all were flown to NAS Cubi Point for further processing.

03 VQ-3 took delivery of two Boeing E-6A *Hermes* at Seattle, Wash. The arrival of the new strategic communications aircraft marks the entry of the newest generation of TACAMO (Take Charge and Move Out) aircraft into the fleet. The E-6A will eventually replace the Lockheed EC-130Q *Hercules* in both VQ-3 and its Atlantic Fleet counterpart, VQ-4.

04 Ten U.S. Naval Test Pilot School graduates were selected by the Navy for NASA astronaut training.

04-08 HSL-44, Detachment 9 embarked on *Thomas S. Gates* (CG-51) and Detachment 10 aboard *Kauffman* (FFG-59) visited the Black Sea port of Sevastopol in the Soviet Union while on scheduled deployments with the Sixth Fleet in the Mediterranean. The visit was part of a goodwill exchange program between the U.S. and Soviet Union.

08-13 *Columbia*, the nation's oldest space shuttle, was launched on mission STS-28 from Cape Canaveral, Fla., with Cdr. Richard Richards in command and Cdr. David Leestma as mission specialist. During its first flight in three and a half years, the shuttle carried a secret military payload and instruments for experiments relating to the Star Wars program. The shuttle received minor damage to its heat-shield tiles during the mission but landed as scheduled in California's Mojave Desert.

25 A NASA-designed *Scout* rocket launched two Navy navigation satellites from Vandenberg AFB, Calif. This marked the culmination of the planned launch program for the TRANSIT system that began in 1962. The Navy relies on TRANSIT for precise position information anywhere on the earth and

in all weather conditions. The two satellites were launched "piggyback" style using the SOOS (Stacked Os-cars on Scout) system.

September

07 An NS-3A modified as the aerodynamic prototype of the ES-3A made its first flight. Sixteen ES-3As will eventually replace the EA-3B *Skywarrior* in fleet air reconnaissance squadrons.



NS-3A

08-21 Twenty nations participated in the NATO operation "Sharp Spear." VP-16 represented Patrol Wings, Atlantic, flying more than 20 antisubmarine warfare missions over the waters surrounding the United Kingdom. "Sharp Spear" was conducted in the Baltic, North Sea, and waters surrounding the British Isles. The scenario was the protection of convoys passing through the area.

11 *Abraham Lincoln* (CVN-72), the Navy's fifth and newest *Nimitz*-class carrier, began her first sea trials off the Virginia coast. The trials comprised limited air operations with the landing of three SH-3H *Sea Kings* from HS-9, including the first helicopter landing on her deck.

12 The Coast Guard retired its last Sikorsky HH-52A *Sea Guard*. The HH-52A served over 26 years as the Coast Guard's primary short-range, search and rescue helicopter. It was replaced by the Aerospatiale HH-65A *Dolphin*.

14 The first Sikorsky HH-60J *Jayhawk* medium-range, search and rescue helicopter rolled out in Stratford, Conn. It will replace the Sikorsky HH-3F in Coast Guard service.

14 The V-22 *Osprey* made its first flight in full airplane mode. The part helicopter, part airplane tilt-rotor aircraft was airborne for about one hour at Bell Helicopter Textron's Arlington, Texas, facility.



V-22 Osprey

14 The Navy Aircrew Common Ejection Seat successfully completed a 600-knot dual ejection from an F-14D test sled at China Lake, Calif.

15 The Marine Corps received the first production AV-8B *Harrier II* equipped with night-attack capabilities from McDonnell Douglas.

17-21 Under the direction of Commander Fleet Air, Caribbean, a number of Navy and Marine Corps squadrons – including HC-2 (Det VI), YP-93, and VC-8 – responded to the destruction brought by Hurricane Hugo to the Caribbean by flying in needed supplies to Puerto Rico and evacuating the seriously injured to hospitals.

22 VMFT-401 transferred its last F-21A *Kfir*, marking the retirement of this Israeli-built fighter from U.S. Naval Aviation. The F-21A served as an aggressor aircraft.

30 *Coral Sea* completed her 28th and final deployment prior to scheduled 1990 decommissioning as she pulled into Naval Station, Norfolk's Pier 12. Final flight operations ended as HS-17 flew off just before CVW-8 performed a 16-plane fly-over in salute to the "Ageless Warrior," which was returning from a Mediterranean deployment that started on May 30.

30 VAK-208 was disestablished as the last Navy squadron dedicated solely to the mission of aerial refueling. Assigned to Reserve Carrier Air Wing 20, the squadron has provided aerial refueling and pathfinder support since its establishment as VAQ-208 in July 1970. It was redesignated VAK-208 on October 1, 1979. Reserve carrier air wing aerial refueling was assumed by VAs 304 and 205, transitioning to the A-6E and the KA-6D *Intruders*.

October

01 Naval Reserve Helicopter Attack Squadron Light (HAL) 4 was officially redesignated Helicopter Combat Support Squadron (HCS) 4 with an added mission of strike rescue. HAL-4 was the last Navy gunship squadron.

02 While on a routine mission, an EA-6B *Prowler* from the VAQ-135 *Black Ravens* operating off *Enterprise* (CVN-65) was intercepted by a MiG-23. A second squadron aircraft was sent to the same station and, approaching from the MiG's blind spot, initiated a perfect rendezvous with the fighter while the rest of the crew snapped pictures.

09 An electrical fire aboard *Forrestal* (CV-59) resulted in the injury of 11 crew members during firefighting efforts, and a delayed deployment of the aircraft carrier and its assigned air wing to the Mediterranean. Originally scheduled to deploy on October 12, she departed Mayport, Fla., on November 4, with CVW-6 embarked, after priority repairs aboard the ship had been made.

14 Reserve student pilots and aircrew from HS-0246, with HS-10 instructors, flew the first nonstaff syllabus flights of the new SH-60F helicopter.

17 The earthquake in northern California brought response from HM-15, Detachment 3 and HC-1. Both conducted lifts of food, water, and relief materials to the heavily damaged areas. HC-11, Detachment 3 also participated in the disaster relief. The amphibious assault ship *Peleliu* (LHA-5) provided food and shelter to homeless earthquake victims.

18-23 The space shuttle *Atlantis*, commanded by Navy Capt. Donald E. Williams with Cdr. Michael J. McCulley as pilot, deployed the Galileo spacecraft on a path toward Jupiter. The successful completion of the STS-34 mission cleared the way for a higher launch rate schedule within the space shuttle program, closer to the pace just before the *Challenger* accident.

26 VS-32 introduced Gen. Colin Powell, Chairman of the Joint Chiefs of Staff, to Naval Aviation. During his visit to *America* (CV-66), Gen. Powell

experienced his first arrested landing on a carrier, while aboard an S-3A *Viking*.

29 The developmental prototype of the Advanced Capability (ADVCAP) version of the Grumman EA-6B made its first flight.

November

01 NAS Pensacola, Fla., became the last Chief of Naval Air Training command to fully convert to civilian contractors for maintenance on aircraft. In the past, the work had been done by Navy personnel in maintenance ratings. Having the work performed by a civilian company is considered more cost-effective.

01 McDonnell Douglas delivered the first production night-attack F/A-18C to the Navy. The first production night-attack F/A-18D followed on November 14.

03 The designation VH-60N was approved for the version of the H-60 helicopter to be used as the worldwide executive transport. Personnel from HMX-1 are responsible for flying the president and his staff in this helicopter.

03 The designation HU-25C was approved for a modified Coast Guard HU-25A *Guardian*, configured for the drug air intercept mission with APG-66 air intercept radars replacing the standard APS-127 surface search radars, a fuselage-mounted forward-looking infrared sensor replacing the existing air drop hatch, and numerous changes to the interior.



E-6A TACAMO aircraft

06 The designation HU-25B was approved for a modified HU-25A with AIREYE sensor system infrared/ultraviolet line scanners, side-looking airborne radar, active gated television, and large format surveillance cameras.

06-07 VX-1 set a Naval Aviation record for flying the longest nonstop, air-refueled flight in the E-6A TACAMO (Take Charge and Move Out) aircraft. Two refuelings were made in flight utilizing Air Force KC-10s from March AFB, Calif.

07 The Lockheed Long-Range Air Antisubmarine Warfare-Capable Aircraft (LRAACA) was designated P-7A.

08 The model designation AIM-9S was approved for the new version of the *Sidewinder* air-to-air missile. The missile has a revised guidance-control section.

09 The model designation CATM-88C was approved for the captive air training version of the AGM-88C air-to-ground HARM missile.

11 The Navy's newest and largest *Nimitz*-class nuclear-powered aircraft carrier, *Abraham Lincoln* (CVN-72), was commissioned at Naval Station, Norfolk, Va.

14 Secretary of the Navy H. Lawrence Garrett III and Chief of Naval Operations Adm. C. A. H. Trost ordered a Navy-wide, 48-hour safety standdown. The order required every ship, squadron, and shore training facility to interrupt normal operations and review basic safety and operating procedures. The order came after a series of unrelated Navy accidents over a period of several weeks.

16 NAS Pensacola, Fla., marked its 75th anniversary. The command was formally designated a Naval Aeronautic Station on this date in 1914.

21 President Bush signed the FY-90 Defense Appropriations Bill. It included research and development money for the V-22, but no money for production. The bill also appropriated money to bring the total construction of new F-14Ds to 37. (See April 25 entry.)

23-28 The orbiter *Discovery* made a night launch from Cape Canaveral, Fla., during mission STS-33, with Navy flight surgeon Capt. Manley Carter aboard as mission specialist. It marked the fifth successful space shuttle launch of the year. The orbiter deployed a secret military payload, which was reported to be a satellite designed to monitor signal transmissions in the Soviet Union.

December

01 Cdr. Bob Christensen, head of the carrier suitability department at Naval Air Test Center, Patuxent River, Md., was the first pilot to land a fixed-wing aircraft – an F/A-18 *Hornet* – aboard the Navy's newest carrier, *Abraham Lincoln* (CVN-72), during certification operations. Certification of the four catapults and arresting gear engines was completed by December 13.

01 *Abraham Lincoln* (CVN-72), landed its first fleet aircraft, piloted by the ship's C.O., Capt. William B. Hayden. Cdr. Charles K. Crandall, Jr., was his radar intercept officer aboard the F-14A *Tomcat* from VF-84.



President George Bush aboard *Belknap* (CG-26) with Soviet ship *Slava* in background.

01 *Forrestal* (CV-59), stationed in the Mediterranean, was visited by President George Bush who toured the carrier just hours prior to boarding *Belknap* (CG-26) for a pre-summit meeting with Soviet Chairman Mikhail Gorbachev. The president observed flight operations and addressed the men of *Forrestal* before transferring to *Belknap*, which was anchored in a bay just south of Malta.

01-02 *Midway* (CV-41) and *Enterprise* (CVN-65), originally scheduled to conduct joint operations, were put on alert status for operation "Classic Resolve," in response to a coup attempt in Manila, R.P. After the situation subsided, *Midway* returned to her home port at Yokosuka, Japan; and *Enterprise* continued her deployment in the Indian Ocean.

02 VAQ-309 officially received the EA-6B *Prowler* at ceremonies aboard NAS Whidbey Island, Wash., becoming the first reserve squadron to operate the modern electronic warfare aircraft.

11 HM-15 completed a 90-day deployment in WestPac. This was the first major deployment of the Navy's newest airborne mine counter-measures helicopter, the MH-53E *Sea Dragon*. The MH-53E is replacing the RH-53D *Sea Stallion*. In May, HM-14, NAS Norfolk, Va., became the first East Coast fleet squadron to receive the MH-53E. ■

Aviation Command Changes in 1989

Established	
HM-19	09 JAN 89
HSL-48	07 SEP 89
Disestablished	
VAK-208	30 SEP 89
ComTacSuppWing-1	01 OCT 89
Redesignated	
ComFitMATAEWWingsLant to ComTacWingsLant	27 APR 89
Naval Aviation Museum to National Museum of Naval Aviation	01 JUL 89
VA-147 to VFA-147	20 JUL 89
VA-146 to VFA-146	21 JUL 89
HAL-4 to HCS-4	01 OCT 89
VA-203 to VFA-203	01 OCT 89
VMA(AW)-121 to VMFA(AW)-121	08 DEC 89

1989 Patrol Squadron Major Deployments

Atlantic Fleet

NAS Bermuda

Aug 88-Feb 89	VP-16	P-3C UII.5
Feb 89-Aug 89	VP-45	P-3C UIIIR
Aug 89-Feb 90	VP-5	P-3C UIIIR

NAS Keflavik, Iceland

Nov 88-May 89	VP-11	P-3C UII.5
May 89-Nov 89	VP-8	P-3C UII.5
Nov 89-May 90	VP-44	P-3C UII

NS Rota, Spain

Dec 88-Jun 89	VP-23	P-3C UII
Jun 89-Dec 89	VP-26	P-3C UII
Dec 89-Jun 90	VP-10	P-3C UII

NAF Lajes, Azores

Dec 88-Jun 89	VP-23 Det	P-3C UII
Jun 89-Dec 89	VP-26 Det	P-3C UII
Dec 89-Jun 90	VP-10 Det	P-3C UII

NAS Sigonella, Sicily

Jul 88-Jan 89	VP-49	P-3C
Jan 89-Jul 89	VP-56	P-3C
Jul 89-Jan 90	VP-24	P-3C

Pacific Fleet

NAS Adak, Alaska

Dec 88-Jun 89	VP-48	P-3C
Jun 89-Dec 89	VP-4	P-3C
Dec 89-Jun 90	VP-17	P-3C

NAF Misawa, Japan

Aug 88-Feb 89	VP-50	P-3C UIIIR
Feb 89-Aug 89	VP-19	P-3C UI
Aug 89-Feb 90	VP-46	P-3C UI

NAF Kadena, Okinawa, Japan

Aug 88-Jan 89	VP-9 Det	P-3C UI
Jan 89-Jul 89	VP-47 Det	P-3C UIIIR
Jul 89-Feb 90	VP-40 Det	P-3C UIIIR

NAS Cubi Point, R.P.

Nov 88-May 89	VP-22	P-3B
May 89-Nov 89	VP-6	P-3B
Nov 89-May 90	VP-50	P-3C UIIIR

NAF Diego Garcia, B.I.O.T.

Jul 88-Jan 89	VP-9	P-3C UI
Jan 89-May 89	VP-22 Det	P-3B
May 89-Nov 89	VP-6 Det	P-3B
Nov 89-May 90	VP-50 Det	P-3C UIIIR

1989 Carrier and Air Wing Deployments

John F. Kennedy (CV-67)

CVW-3 (Tail Code: AC) Med.
02 Aug 88-01 Feb 89

Squadrons	Aircraft
VF-14	F-14A
VF-32	F-14A
VMA(AW)-533	A-6E
VA-75	A-6E/KA-6D
VAW-126	E-2C
VAQ-130	EA-6B
HS-7	SH-3H
VS-22	S-3A

Constellation (CV-64)

CVW-14 (Tail Code: NK)
WestPac/IO,
01 Dec 88-01 Jun 89

Squadrons	Aircraft
VF-21	F-14A
VF-154	F-14A
VFA-25	F/A-18A
VFA-113	F/A-18A
VA-196	A-6E/KA-6D
VAW-113	E-2C
VAQ-139	EA-6B
HS-8	SH-3H
VS-37	S-3A

Theodore Roosevelt (CVN-71)

CVW-8 (Tail Code: AJ) Med,
30 Dec 88-30 Jun 89

Squadrons	Aircraft
VF-41	F-14A
VF-84	F-14A
VFA-15	F/A-18A
VFA-87	F/A-18A
VA-35	A-6E
VA-36	A-6E
VAW-124	E-2C
VAQ-141	EA-6B
HS-9	SH-3H
VS-24	S-3A

America (CV-66)

CVW-1 (Tail Code: AB)
NorLant/Carib,
08 Feb 89-03 Apr 89

Squadrons	Aircraft
VF-33	F-14A
VF-102	F-14A
VFA-82	F/A-18C
VFA-86	F/A-18C
VA-85	A-6E/KA-6D
VAW-123	E-2C
VAQ-137	EA-6B
HS-11	SH-3H
VS-32	S-3A

Ranger (CV-61)

CVW-2 (Tail Code: NE)
WestPac/IO,
24 Feb 89-24 Aug 89

Squadrons	Aircraft
VF-1	F-14A
VF-2	F-14A
VMA(AW)-121	A-6E
VA-145	A-6E
VAW-116	E-2C
VAQ-131	EA-6B
HS-14	SH-3H
VS-38	S-3A

America (CV-66)

CVW-1 (Tail Code: AB) Med/IO,
11 May 89-10 Nov 1989

Squadrons	Aircraft
VF-33	F-14A
VF-102	F-14A
VFA-82	F/A-18C
VFA-86	F/A-18C
VA-85	A-6E/KA-6D
VAW-123	E-2C
VAQ-137	EA-6B
HS-11	SH-3H
VS-32	S-3A

Coral Sea (CV-43)

CVW-13 (Tail Code: AK) Med,
31 May 89-30 Sep 89

Squadrons	Aircraft
VMFA-451	F/A-18A
VFA-132	F/A-18A
VFA-137	F/A-18A
VA-55	A-6E
VA-65	A-6E
VAW-127	E-2C
VAQ-133	EA-6B
HS-17	SH-3H

Nimitz (CVN-68)

CVW-9 (Tail Code: NG)
NorPac,
15 Jun 89-09 Jul 89

Squadrons	Aircraft
VF-24	F-14A
VF-211	F-14A
VA-146	A-7E
VA-165	A-6E
VAW-112	E-2C
VAQ-138	EA-6B
HS-2	SH-3H
VS-33	S-3A

Note: VA-147, assigned to CVW-9, did not deploy because of F/A-18C transition.

Midway (CV-41)

CVW-5 (Tail Code: NF)
(Forward Deployed WestPac) IO,
15 Aug 89-11 Dec 89

Squadrons	Aircraft
VFA-151	F/A-18A
VFA-192	F/A-18A
VFA-195	F/A-18A
VA-115	A-6E/KA-6D
VA-185	A-6E/KA-6D
VAW-115	E-2C
VAQ-136	EA-6B
HS-12	SH-3H

Carl Vinson (CVN-70)

CVW-15 (Tail Code: NL)
NorLant/WestPac,
05 Sep 89-08 Nov 89

Squadrons	Aircraft
VF-51	F-14A
VF-111	F-14A
VA-27	A-7E
VA-52	A-6E
VA-97	A-7E
VAW-114	E-2C
VAQ-134	EA-6B
HS-4	SH-3H
VS-29	S-3A

Constellation (CV-64)

CVW-14 (Tail Code: NK)
NorPac,
16 Sep 89-19 Oct 89

Squadrons	Aircraft
VF-21	F-14A
VF-154	F-14A
VFA-25	F/A-18A/C
VFA-113	F/A-18A/C
VA-196	A-6E/KA-6D
VAW-113	E-2C
VAQ-139	EA-6B
HS-8	SH-3H
VS-37	S-3A

Enterprise (CVN-65)

CVW-11 (Tail Code: NH)
World Cruise,
17 Sep 89-16 Mar 90

Squadrons	Aircraft
VF-114	F-14A
VF-213	F-14A
VA-22	A-7E
VA-94	A-7E
VA-95	A-6E/KA-6D
VAW-117	E-2C
VAQ-135	EA-6B
HS-6	SH-3H
VS-21	S-3A

Forrestal (CV-59)

CVW-6 (Tail Code: AE) Med,
04 Nov 89-12 Apr 90

Squadrons	Aircraft
VF-11	F-14A
VF-31	F-14A
VA-37	A-7E
VA-105	A-7E
VA-176	A-6E/KA-6D
VAW-122	E-2C
VAQ-142	EA-6B
HS-15	SH-3H
VS-28	S-3A

Contractor codes:

L = Lockheed
S = Sikorsky
G = Grumman

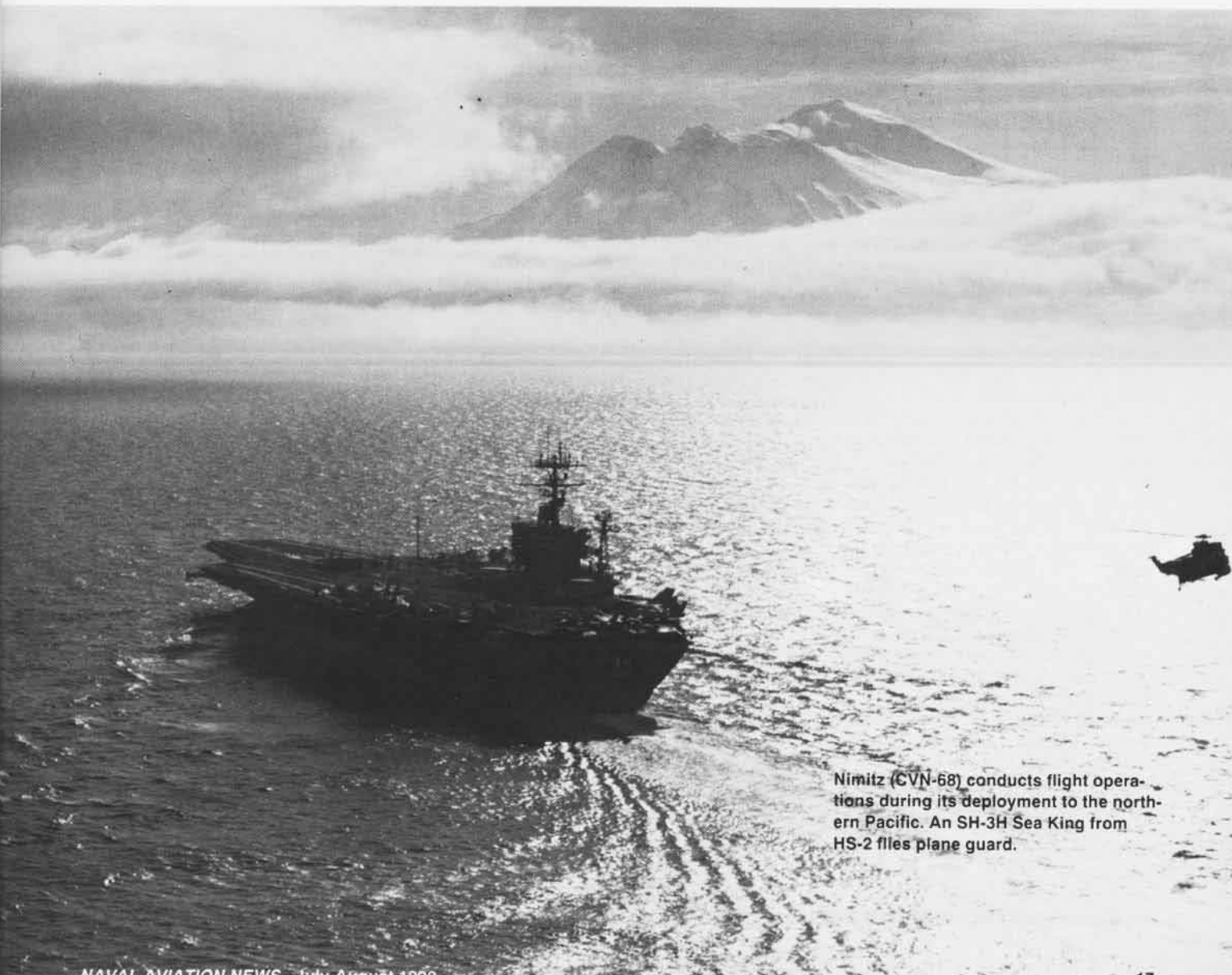
Bureau Numbers Issued in 1989

The numbers below were assigned by the Chief of Naval Operations during 1989 for future Navy and Marine Corps aircraft:

Numbers	Qty	Type	Name	Contractor
164441-164442	2	KC-130T	Hercules	L
164443-164460	18	SH-60F	Seahawk	S
164461-164466	6	SH-60B	Seahawk	S
164467-164469	3*	P-3C	Orion	L
164470-164482	13	CH-53E	Super Stallion	S
164483-164518	36	E-2C	Hawkeye	G
164519-164523	5	A-12A	Avenger II	GD/McD
164524-164525	2	U-6A	Beaver	DH-C
164526-164535	10	A-12A	Avenger II	GD/McD
164536-164539	4	CH-53E	Super Stallion	S
164540-164571	32**	AV-8B/TAV-8B	Harrier II	McD
164572-164578	7	AH-1W	Super Cobra	BI
164579-164583	5	T-44B	King Air	Be
164584-164585	2	X-31A	***	R

*Foreign military sales **Includes 3 TAV-8Bs ***Enhanced Fighter Maneuverability demonstrator

GD/McD = General Dynamics/ McDonnell Douglas DH-C = de Havilland Canada BI = Bell Be = Beech R = Rockwell



Nimitz (CVN-68) conducts flight operations during its deployment to the northern Pacific. An SH-3H Sea King from HS-2 flies plane guard.

E-6A

By Hal Andrews

E-6A



Emphasis in the design and operation of most of today's new Navy aircraft is on multimission capability. One exception, by designation and intended role, might seem to be the Boeing E-6A. Fleet Air Reconnaissance Squadrons (VQs) 3 and 4 will operate E-6As in the same manner as their EC-130s – as TACAMO (take charge and move out) communications platforms serving as command links to the fleet ballistic missile submarine force. In spite of their new military designation, the E-6As, like the EC-130s, are part of a large family of transports that have been adapted to many roles. Prototypes of both designs first flew within a month of each other in the summer of 1954.

Following Boeing's prototype four-jet transport, widely publicized as the first of the 707 series, the Air Force ordered the first production models as KC-135 tanker transports. Much modified and adapted, these still serve the Air Force, and two were transferred to the Navy in the late 1970s for use in the electronics support role. Similar in appearance, but considerably redesigned, the first 707-120 airline transports rolled off Boeing's production lines in 1957. By the time these were in service, the larger 707-320 series was following, designed for long-

range transoceanic service. Both models soon received turbofan engines in place of their original jets. The Navy's E-6A is the final derivative of the 707-320 series to be added to the production line, joining its better known E-3A *Sentry* AWACS (airborne warning and control system) predecessor.

The first 707-320 series to join the military took on the duties of the presidential aircraft as "Air Force One" in 1962, two joining several earlier 707-120s in the VC-137 series. Ten years later, the two prototypes for what would become the E-3 were also designated in this series. In addition to the large radome mounted on struts above the aft fuselage, similar to that on the prototypes, many detail modifications were made to the 707-320B airframe for the subsequent production E-3As. Particular attention was paid to hardening the airframe against the effect of electromagnetic radiation and nuclear blasts. Updated E-3s serve the Air Force, NATO, and other countries, and are still being produced today.

With the Navy order for TACAMO versions of the 707-320B airframe, the E-6A designation was assigned for these airframes, to be built on the E-3A line. At the same time, C-18 series



707 Prototype

and E-8A designations were assigned to ex-airline 707-320Bs purchased and modified as test aircraft, both for airborne range instrumentation duties and the JSTARS (joint surveillance target attack radar) program. The former, as EC-18Bs, feature a bulbous nose radome, while the latter carry an elongated under-fuselage radome for a multimode side-looking radar.

The E-6A had its beginnings in studies at the Naval Air Development Center, Warminster, Pa., looking for an expanded capability airframe for the TACAMO role. Among several turbofan-powered jet transports, the basic Boeing 707-320B was particularly attractive because of the availability of the hardened E-3A airframe in production. Higher bypass ratio, more fuel efficient GE-SNECMA CFM 56 engines were being retrofitted to various

first-generation, four-jet commercial transports and would enhance the performance of a TACAMO version. Space and weight-carrying capability would accommodate the various communications systems of the EC-130 TACAMO aircraft, including the long trailing very low frequency antenna and its extension/retraction system.

Based on the study results, the TACAMO replacement program got under way; the first two of a planned buy of 16 were ordered in 1984. Unusual was the concept that major components of the communications systems in squadron EC-130s would be removed and reinstalled in the E-6As as they were completed. Many features of the E-3 airframe were retained, including the in-flight refueling receptacle for the flying boom refueling system located at the top of the fuselage aft of the cockpit. A forward cargo door, as on commercial air freight transports, was installed for purposes of transporting major spare components to remote sites.

Provisions for the two trailing wire antennas, one extending from under the mid-fuselage and the other from the tail cone, are among the obvious changes. Enlarged wing tip pods for

special electronic equipment are also fitted. Not obvious are the structural changes required to carry the heavy communications systems in the aft fuselage and the increased level of electromagnetic pulse and nuclear blast hardening over that already incorporated in the E-3s.

The first E-6A rolled out in December 1986 and made its first flight in February 1987. After initial flights at Seattle, Wash., it was ferried to the Naval Air Test Center, Patuxent River, Md., for further systems development testing. Crew training using contractor-owned commercial 707-320s began for squadron personnel with no standdown required for squadron transition — a necessity to maintain the strategic communications links. Operational test and evaluation was undertaken by VX-1. Initial deliveries to VQ-3 took place in August 1989.

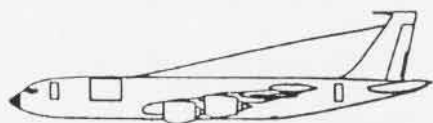
The new flight profiles and structural characteristics that the E-6A introduced to the 707-320 airframe did result in some unanticipated development challenges. Their resolution will provide the necessary survivable strategic command link to the submarine-launched leg of the strategic nuclear triad well into the future. ■

E-6A



Span	148'2"
Length	152'11"
Height	42'5"
Engines: Four GE-SNECMA	
F108-CF-100	24,000 lbs. thrust
Maximum speed	525 kn
Service ceiling	42,000'
Range (unrefueled)	6,350 nm
Crew (including 8 relief crew)	18

E-6A



Tanking the TACAMO

By Lt. Jeff Dunn

The times of iron men and wooden ships are long past. Today's *Iron-men*, assigned to Fleet Air Reconnaissance Squadron (VQ) Three, travel aboard sophisticated aircraft. Homeported at NAS Barbers Point, Hawaii, VQ-3 is the first TACAMO (take charge and move out) squadron to receive the Navy's newest and largest aircraft. The only first-line heavy jet in the Navy's inventory, the Boeing E-6A is replacing the Lockheed EC-130Q and is equipped with the latest technology in avionics and jet engine design. Its four by-pass turbofan engines are more powerful, more fuel efficient, and 50-percent quieter than conventional jet engines.

The TACAMO operational commitment is to provide 100-percent airborne communications coverage in the Pacific theater. This requires the squadron to have a fully mission-capable aircraft airborne 24 hours a day, 365 days a year.

Whenever a scheduled mission aircraft is unable to fly due to maintenance, the airborne aircraft scheduled to be relieved would continue to fly until a replacement aircrew and aircraft could be launched. The main limiting factor for the aircraft has been fuel endurance throughout the mission. The E-6A's in-flight refueling capability eliminates that problem.

This new capability has brought about new considerations for the *Iron-men* of VQ-3. In the planning stage of refueling operations, there is now the need to work closely with the Air Force in coordinating the use of the KC-135 or KC-10 aerial refueling tankers. The execution of air refueling is where the crews are challenged the most. No matter how extensive the planning or crew briefings may be, it comes down to two planes that have to find each other in a very large sky.

The time, altitude, latitude, and longitude are classified and known only from the preflight brief. It still takes two navigators plotting precise fixes to make it come together. Using all available navigation equipment, the

navigators of the tanker and E-6A guide the two aircraft to within a half mile, usually with minimum radio contact. Once visual contact is made, the tanker pilot flies the smoothest, constant altitude flight path possible as the TACAMO pilot brings the E-6A to



approximately 25 feet behind. When both aircraft are stabilized, the tanker's air refueling boom operator extends his boom nozzle, inserts it into the E-6A's refueling receptacle, and coordinates fuel transfer.

Depending on the amount of fuel to be transferred, the TACAMO pilot may have to maintain position behind the tanker for nearly an hour. The receiving pilot has an arduous task by any standard — particularly during adverse weather, at night, and during maneuvering — to remain within airspace.

Another key player is the TACAMO flight engineer whose actions must be timely during both normal and abnormal situations while maintaining constant awareness of fuel distribution and aircraft center of gravity. Remarkably, it is a common occurrence and handled so routinely that it belies the intricacy and expertise involved.

The increased range and endurance of the E-6A, coupled with the "take charge and move out" attitude that is TACAMO, forge a stronger link in the strategic chain of our nation's defense. ■



E-6A approaches an Air Force tanker (top and center) and receives the refueling boom (bottom) into the receptacle behind the cockpit.

Photos by Lt. Charles Taggart

Association of Naval Aviation Bimonthly Photo Competition

Right: Lt. John Gaffney, Clearwater, Fla., took this winning photo in the third bimonthly ANA Photo Contest. He captured an HH-3F from USCG Air Station, San Francisco landing on Mile Rocks Light outside the Golden Gate Bridge. Below: PHC Chet King, Fleet Imaging Command, Pacific, photographed a Navy airman washing the engine cowling on a P-3 during a deployment to NAS Sigonella, Sicily. Below right: Ltjg. Jon A. Skinner, SHAPE, Belgium, shot this VF-24 Tomcat during carrier qualifications aboard Nimitz in 1988.



The Association of Naval Aviation Photo Contest

The Association of Naval Aviation and its magazine, *Wings of Gold*, is continuing its annual photo contest which began in 1989. Everyone is eligible except the staffs of *Wings of Gold* and *Naval Aviation News*. The **ONLY** requirement is that the subject matter pertain to Naval Aviation. Submissions can be in black and white or color, slides or prints of any dimension. Please include the photographer's complete name and address, **and PHOTO CAPTION.**

Cash awards: Bimonthly — \$100; Annual — First, \$500; Second, \$350; Third, \$250.

For deadline and submission details, call (703) 998-7733.

Mail photographs to: Association of Naval Aviation Photo Contest, 5205 Leesburg Pike, Suite 200, Falls Church, VA 22041.

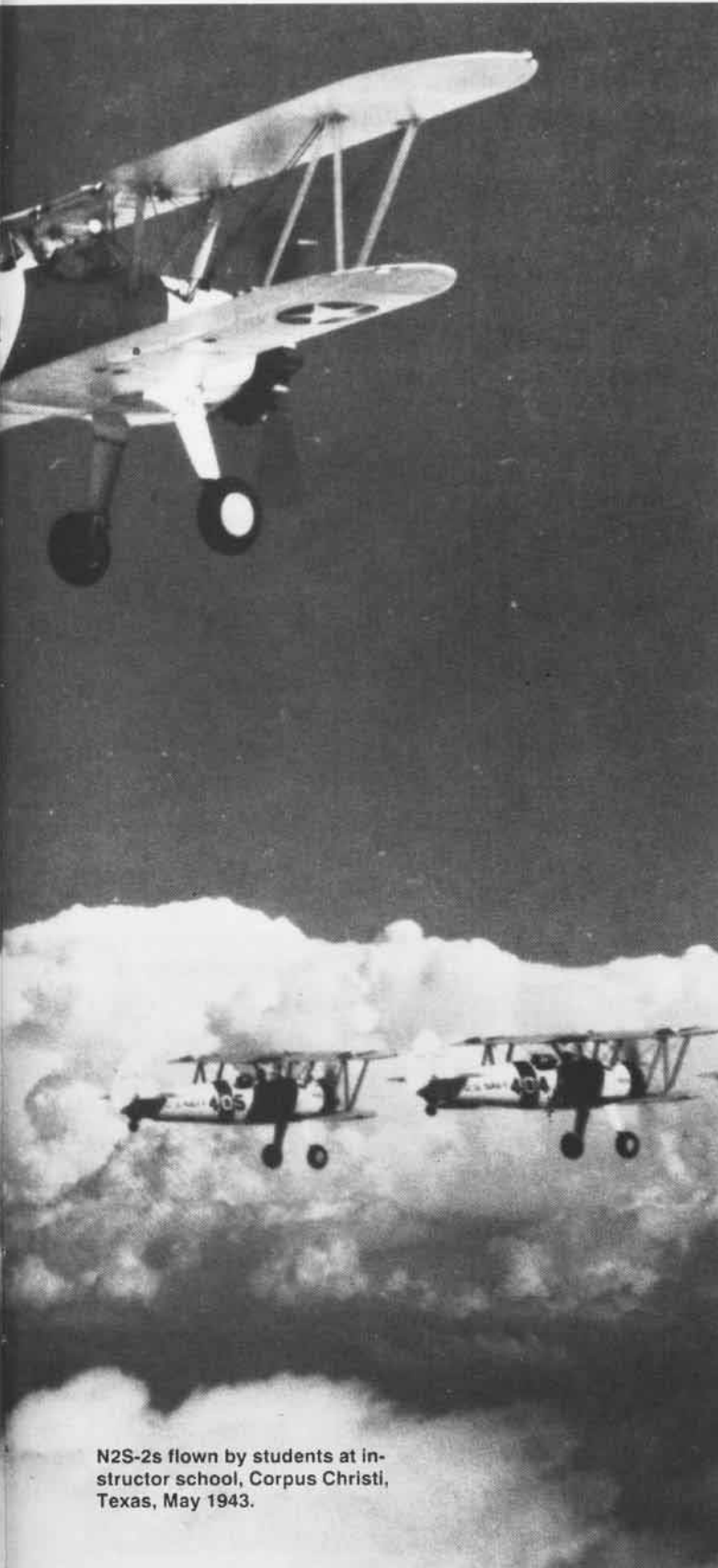


Aviation Training and

Expansion

Part 1

By Capt. Matt Portz, USNR(Ret.)



N2S-2s flown by students at instructor school, Corpus Christi, Texas, May 1943.

This story by retired Captain Matt Portz reviews the Navy's pilot training within the broader context of the wartime world and national events as seen through the eyes of some who lived at the time. Capt. Portz, now vice president of Aviation Consultants, Inc., of Los Angeles, Calif., served as a junior officer aboard a destroyer before entering flight training in early 1943. Receiving his wings late that year, he was assigned as a flight instructor, first in Primary and later in instruments. After service with the fleet in the Korean War, he headed the Naval Aviation Periodicals and History Office of the Deputy Chief of Naval Operations (Air) from 1952 to 1954. He is the author of "Litany of Precision - WW II Style" (NANews, September-October 1987) and "Memories of WW II Training" (Volume One, Diamond Anniversary of Naval Aviation Commemorative Collection, 1986).

Almost 65,000 Naval Aviators, American and Allied, were trained by the U.S. Navy between 1941 and 1945. The story of shaping young men into Naval Aviators for the war began in 1935, not 1941. In 1935, the Navy and Marine Corps aviation community had fewer than 1,500 aircraft of all types, with less than 1,000 pilots, 575 nonpilot officers, and about 13,000 enlisted personnel. Japanese brutality had terrorized China for four years; Hitler's thugs had bullied Europe for three. In recognition of the need for pilots, the Aviation Cadet Act was passed by the Congress to create the grade of aviation cadet in the Naval and Marine Corps reserves. The act also set up a pilot training program for college graduates between ages 18 and 28. Following one year of flight instruction and three more years on active duty, aviation cadets would return to the inactive reserve as ensigns or

second lieutenants.

President Roosevelt in 1938 called for rebuilding U.S. military forces. Naval Aviation had 2,050 aircraft, 1,700 pilots, 600 nonpilot officers, and 20,500 enlisted personnel. The Nazis occupied Austria and the Sudetenland; more of China fell to the Japanese. The Secretary of the Navy appointed the Hepburn Board to survey the Naval Aviation shore establishment in recognition of a fact of life at the time: in case of war, great expansion of Naval Aviation would be required. The board recommended enlargement of 11 existing air stations and establishment of 16 new ones. The Naval Expansion Act of 1938 authorized 3,000 new aircraft. These would replace the biplanes then operating from fleet carriers with Grumman F4F *Wildcat* fighters, Douglas SBD *Dauntless* dive-bombers, and other planes with which the Navy would fight in the early days of the oncoming war.

The Aviation Cadet Act was revised in 1938 to provide for immediate commissioning of cadets after training. To speed production of pilots, the training period was reduced from 12 to 6 months, and ground school from 33 to 18 weeks. Primary training was in landplanes, Basic in service landplanes, and instrument flying required of all. Students in advanced training would choose either patrol and utility, observation, or carrier aircraft. In September, the Nazis and Russians dismembered Poland. President Roosevelt declared a state of limited national emergency. Naval Aviation, including its Marine components, now boasted 2,100 aircraft, 1,800 pilots, 625 nonpilot officers, and 21,000 enlisted personnel.

By 1940, Naval Aviation had around 2,100 aircraft and a pilot strength of 2,900. This was the year that France surrendered to Germany, the British army was evacuated from the continent, and Germany occupied Denmark, Norway, and the Low Countries. The president called for rapid modernization and build-up of the Army and Navy, including production of 50,000 aircraft per year, and the Navy requested \$4 billion for a "two-ocean navy." As the Battle of Britain raged, Roosevelt and Churchill made a deal

to trade 50 old U.S. destroyers for British naval and air base sites in the Atlantic.

Anticipating Naval Aviation expansion, the Chief of Naval Operations established the Mason Board to study and recommend measures for pilot training. Board proposals included enlargement of 12 existing Naval Reserve Air Bases (NRABs) and the establishment of eight new ones. NRABs, called E-bases, gave 30 days of "elimination" training to pilot candidates. Successful ones went on to Pensacola, Fla., or Corpus Christi, Texas, as aviation cadets for an additional six months of training before commissioning and assignment to a squadron. NRABs were to become the nucleus of the wartime Primary training establishment.

Although there was no connection, it would be gratifying to me had there been. I enlisted in the Naval Reserve on July 22, 1940 — the day that Churchill rejected a peace offer that Hitler had made four days earlier in a speech to the Reichstag. In mid-August, as ordered, I reported to the battleship *Illinois*, a relic of Teddie Roosevelt's "Great White Fleet." Noah's Ark must have resembled this barnlike hulk at the edge of the North

River in New York City. Within an hour, along with several hundred other college men, I was off *Illinois*, outfitted in sailor's whites, and on my way to sea for a month's introduction to the ways of the Navy aboard the battleship *Arkansas*, then anchored in the river.

While I swabbed decks and learned about battleships, the first peacetime draft law — Selective Service — was passed by Congress, and National Guard units began mobilization. Back in New York after port calls at Guantanamo, Cuba; Panama; and Norfolk, Va., my civilian clothing was returned, I was reminded of my membership in the Naval Reserve, signed up for a Midshipmen's School class convening in June 1941, and on my way back to college for another term.

"You're climbing too slow. Get that nose down. Stop making flat turns. Do you want to spin us in? Your control work is jerky. How come you don't have any confidence, hey?" These words came from a red-faced, gangly king of a 50-horsepower Piper J-3 *Cub*. The flight instructor's words were directed at me, his student.

At 500 feet over the colorful Ohio countryside that autumn of 1940, the sharp words didn't bother me a bit. I wanted to be like those aviators I had



Instructors under training at NAS New Orleans, La., learn the proper use of the gosport, 1943.



Students endure rigorous physical training on the obstacle course, Lockport, Ill., 1943.

observed and envied as they played tag with clouds overhead. This had been a compelling urge since age 10 and a \$5.00, five-minute flight in an OX-5-powered Travelair biplane. After the *Arkansas* cruise, my first step toward that goal was the Civil Aeronautics Authority Civilian Pilot Training Program, CAA-CPT.

The president's call to increase the country's military aircraft production fifty-fold generated a national effort to train pilots. The CAA-CPT was a beginning. Launched experimentally at 12 colleges in 1939, 700 schools, including my own, were in the program by the 1940 fall semester. Beyond his or her urge to fly, the simple requirements to get into CPT were passing a flight physical exam and producing \$20.00 for insurance and \$4.50 for textbooks.

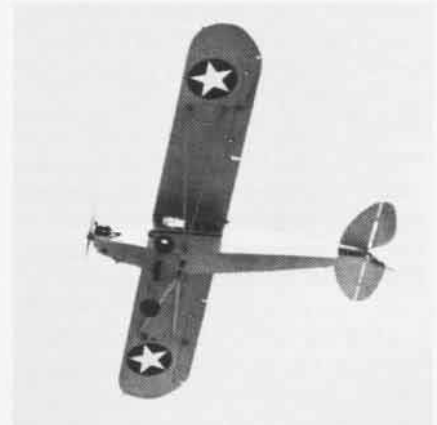
The elementary CPT course included 35 to 40 hours of primary flight in the Piper *Cub* at the local airport

and 72 hours of ground school at the college. At the end of the course, satisfactory completion of a check flight with a CAA inspector earned a private pilot's license. No military obligation was assumed, but most graduates eventually went into the Army or Navy. Many of the women became pilots in the wartime Women Airforce Service Pilots. Requirements of the program were changed later to exclude women and to require a military obligation.

Admiral Yamamoto's pilots blasted America fully into the war with their blitz on Pearl Harbor in December 1941, but that was a bloody year from its beginning. The president had declared an unlimited national emergency in May, American "lend-lease" war material was shipped to the British, and by fall Navy ships were escorting convoys to Iceland and to Britain. Fire was exchanged with U-

boats, U.S. ships were damaged or sunk, and crewmen perished. Hitler launched a massive attack on Russia across more than 1,800 miles from the Black Sea to the Arctic. Japan occupied much of Southeast Asia and China; Germany the Balkans, Greece, and Crete, and was on the offensive in Africa. U.S. Marines moved into Greenland, Iceland, and Trinidad. By year's end, Guam and Wake Island fell to the Japanese.

In mid-1941, Naval Aviation had 3,400 aircraft, 4,600 pilots, 1,000 non-pilot officers, and 13,700 enlisted personnel. To speed production of pilots, Navy carrier flight students now specialized in fighter, scout-bomber or torpedo aircraft rather than all three as before. Quotas for entering students were raised from 800 to 2,500 per month with a goal of producing 20,000 pilots annually by 1943.



Piper Cubs, like this NE-1, served for elimination training.

All naval reservists were called to active duty on June 12, 1941, coincidentally the day that I and 499 others were sworn in as midshipmen, V-7, aboard "Noah's Ark," *Prairie State*, as *Illinois* had been renamed. An intensive 24-hour-a-day boot camp and concentrated academic combination saw most of us wearing ensign's stripes 97 days later. My orders were to *Elliot*, an old destroyer of the deal-for-bases type that had been converted to a high-speed mine sweeper. I was directed to report to Naval Air Station, San Pedro, Calif., to await transportation to wherever *Elliot* might be.

Scattered fracto cumulus dotted the

southern California sky from Dana Point to Malibu as I merrily flew a rented Aeronca over the harbors of Long Beach and Los Angeles. During the two-week wait at San Pedro, my only Navy duty was to check each day on the availability of transportation. This gave ample opportunity for flying rented planes up and down the coast, but the interlude ended when I became junior engineering officer in *Elliot's* black gang at Pearl Harbor, Territory of Hawaii.

In company with *Indianapolis*, *Hopkins*, *Southard*, *Long*, and *Dorsey*, *Elliot* cruised on one of her two engines off Johnston Island on December 7, 1941, when the urgent dispatch, "Air raid Pearl Harbor. This is no drill," was received in the radio shack. I was in dungarees inside the port condenser trying to find a saltwater leak in the ship's freshwater system. Leak or not, the ship went to general quarters, put both engines on line, and made best speed back to Pearl. Two days later, as we neared the harbor entrance, a Douglas SBD *Dauntless* from *Enterprise* could be seen in shallow water where it had been shot down by our own trigger-happy people. Inside the harbor lay the wreckage of battleship row. Some fires still smoked. Bunker fuel covered the waters.

Most war news in the spring of 1942 was bad. Tokyo propagandists were heard "interviewing Wake Island prisoners" with the voices of the same actors playing the roles of "different prisoners" attesting "humane" treatment. In addition to Wake and Guam, Singapore fell, *Prince of Wales* and *Repulse* had been sunk by Japanese aircraft off Malaya, the British and Dutch lost other major ships in the Battle of the Java Sea, Bataan surrendered, and a few American and Filipino survivors clung to Corregidor. In April, one bright light illuminated the gloom. Jimmy Doolittle's 16 North American B-25 *Mitchell* bombers launched from *Hornet* bombed Japan. Damage was minimal, but depressed American spirits soared, and Japan

pulled back offensive forces for home defense.

Lexington was exchanged for the Japanese carrier *Shoho* in the Battle of the Coral Sea in May. The heavily damaged *Yorktown* was repaired quickly at Pearl and, along with *Enterprise* and *Hornet*, steamed off toward Midway to change the course of the war in the Pacific. The Japanese carriers *Kaga*, *Soryu*, *Akagi*, and *Hiryu* and their veteran air groups were exchanged for *Yorktown* in early June. In August, we invaded Guadalcanal. *Saratoga's* aircraft sank the Japanese carrier *Ryujo*, and *Enterprise* and *Saratoga* were damaged in separate actions. The next month, *Wasp* was sunk by a submarine and *Hornet* was lost in the Battle of Santa Cruz.

Navy flight training was expanding rapidly under Captain Arthur Radford and Commander Austin "Artie" Doyle in Washington, both of whom later became distinguished admirals. Trainees were pushed into the air as fast as new facilities were commissioned. Numbers were limited only by aircraft and the fields from which to fly. The E-bases were discontinued in February when they became fully occupied with Primary students. The draft had taken so many college men by April that qualifications for enlistment as

naval aviation cadets, V-5, were reduced from two years of college to a high school diploma. This plugged up the training system with enlistees, as more bases, training planes, and flight instructors were produced to break the jam. At the time of the Battle of Midway, the Navy and Marine Corps aviation populace comprised more than 7,000 aircraft, 11,000 pilots, 7,000 non-pilot officers, and 40,000 enlisted personnel.

To keep the pipeline flowing, preflight training was initiated at the Universities of North Carolina, Iowa, Georgia, and at St. Mary's College and the Del Monte Hotel in California. Navy students at these schools were exposed to about three months of intensive physical training and Navy indoctrination. From here, cadets moved to three months of Primary and four more of Intermediate. Most had been exposed to flying light planes in the CAA-CPT before being called to active duty at the preflight schools. Navy flight training was this way in June 1942, but many changes were made in the length and phases of the training program as the war progressed. Supervision had moved from Washington to four newly established functional commands: Primary, Intermediate, Operational, and Technical. The first three trained aviators, the lat-

Les Sholly



Waco UPF-7s on the flight line at Navy-CAA Flight Instructor School, Lockport, Ill., February 1943.

ter the technicians to keep them flying.

As a diversion during the Midway campaign, Japanese carrier aircraft attacked Dutch Harbor in the Aleutians. *Elliot* with me in her crew went there, but my heart remained in the sky. I asked for a transfer into Naval Aviation. The Navy's response was that I could give up my commission to become a cadet or wait until completing a year aboard *Elliot* and then apply for training in grade as a blimp pilot. Soon thereafter, an ALNAV (message) arrived which announced opportunity for training in heavier-than-air craft after a year at sea. Things were looking brighter. That ALNAV was followed by another which announced that "to meet the urgent requirements for pilots" junior reserve officers holding a pilot's certificate could request Navy flight training but would serve as instructors before assignment to a squadron. I sent requests to be considered under both ALNAVs. Meanwhile, we cruised in the Aleutian fog, storms, and cold; were missed by a torpedo from a submarine, the RO-61, later sunk by *Reid*; and were saved by *Nashville's* guns off Kiska when Japanese shore battery fire got uncomfortably close.

Coveted orders for entry into Naval Aviation came in January 1943. The

troop transport *Wharton* delivered me from Kodiak, Alaska, to Seattle, Wash., in the midst of the city's heaviest snowstorm in 25 years. After leave in California, my train arrived at a dirty station in Chicago on a day colder than the one left in Kodiak. The cross-country train trip had been memorably punctuated by ladies in Grand Island, Neb., who braved a blizzard to serve coffee, cake, and pie to men in uniform on the train. After checking in with the Chicago Naval Aviation Cadet Selection Board, responsible for processing flight candidates, the local bus took me to the

Lewis School of Aeronautics at Lockport to begin training, which resulted in Navy wings on my uniform some nine months and 350 flight hours later. New mine sweepers, destroyer escorts, and landing craft moving down the nearby Chicago Sanitary Canal from Great Lakes construction yards were daily reminders of the war. Otherwise, the war was remote. ■

See Part 2 in *NANews*, September-October 1990.

50 Years Ago – WW II

July 19: Authorization for a further expansion of the Navy provided an increase of 200,000 tons in the aircraft carrier limits set the previous month, and a new aircraft ceiling of 15,000 useful planes. The act also allowed further increases in aircraft strength on Presidential approval.

August 29: The exchange with the British Tizard Mission of scientific and technical information concerning radar began at a conference attended by Sir Henry Tizard, two of his associates,

and representatives of the U.S. Army and Navy, including Lt. J. A. Moreno of the Bureau of Aeronautics. The initial conference dealt primarily with the British techniques for detecting German bombers but touched upon means of identifying friendly aircraft. In follow-on meetings, British developments of shipboard and airborne radar were also discussed. A British disclosure growing out of this exchange of particular importance for airborne radar application was the cavity magnetron, a tube capable of generating high-power radio waves of a few centimeters in length.



Black Mac

"The night fighter's universe is a tiny cockpit lighted only by a dim glow from the instrument panel, soaring through the eerie abyss of the Pacific night. For hours on end, he will see no man, no plane, no land. He can distinguish no horizon. When the great tropical moon is up and the stars are out and the towering masses of cumulus clouds are sheened in

moonlight, there is no earthbound beauty that can compare When the weather is heavy and dark, and a man can see no farther than his own wing tip, there is nothing more fearful. In luminous beauty or chilling void, the night fighter is alone."

TSgt. Gerald D. Gordon and
SSgt. Robert W. Harvey, USMC
Combat Correspondents, WW II

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On June 29, 1945, Marine Corps pilots made aviation history. Flying solo, in single-engine planes, in darkness over Okinawa, Marine Night Fighter Squadron (VMF(N)) 533 shot down its 30th enemy plane; all were radar interceptions. Up to that time, single-engine night fighters had downed only 12 enemy planes in the whole Pacific war. The pioneer night fliers of VMF(N)-533 achieved a WW II record.

The man who made that achievement possible, who trained, commanded and flew with his night fighters, was a 33-year-old lieutenant colonel from Lexington, Ky. From articles and recollections of Colonel Marion M. Magruder, USMC(Ret.), from Navy and Marine Corps files and from VMF(N)-533's war diaries for May and June 1945, the staff of *VARIA* magazine learned the story of Black Mac and his heroic night fighters.

August 1942. United States Marines struggling to hold Guadalcanal were being attacked almost nightly by Japanese planes. The American air forces had no night fighters; antiaircraft fire wasn't enough protection. A frantic call requesting air support went back to Washington.

On duty at Marine Corps Headquarters Aviation Division when the call came in was a handsome, black-haired major. He was a career officer who had earned his commission at the University of Kentucky in 1936, along with an B.A. degree, cum laude, in psychology, top honors as the out-

standing ROTC cadet, and the university's welterweight boxing title. As the division's assistant materiel officer, Major Magruder had been at headquarters for two years working to build a peacetime Marine air corps of two aircraft groups, 200 planes, and 2,000 officers and men into a combat-ready force of 36 groups, 5,000 aircraft, and 125,000 personnel. It was his second assignment in Washington.

In his first assignment as an officer, he had done double duty: by day, training 300 Marines at the Washington Navy Yard; at night, serving as a social aide at the White House, where his responsibilities included escorting debutantes and, occasionally, the First Lady. He and Eleanor Roosevelt danced the Big Apple, Colonel Magruder remembers, and she was a very good partner. In the three years between his Washington postings, Magruder won his pilot's wings, married his hometown sweetheart, Martha Kelly, served with a Marine fighter squadron in the Caribbean and aboard the aircraft carrier *Wasp*.

When the SOS came from Guadalcanal, Major General R. J. Mitchell, head of Marine Corps aviation, responded: The English knew about night fighting. The Royal Air Force (RAF) had been sending its Beaufighters into darkness to turn back the Luftwaffe. Maj. Gen. Mitchell chose five Marine pilots and five technicians to be trained by the RAF. One of the pilots was Maj. Magruder. For

four months, he flew and fought beside veterans of the Battle of Britain over the English Channel, learning the techniques and problems of night fighting. Then he came home to organize a new branch of Marine aviation.

October 1, 1943. VMF(N)-533 was commissioned at MCAS Cherry Point, N.C., after six months of arduous training by "Black Mac." The squadron's nickname for him ("never to my face," Magruder says) came not from the skipper's hair but his style. "I was a very exacting commander – but fair," the colonel emphasizes. His job was to prepare 35 pilots fresh out of basic flight school for night combat. Ground radar maintenance men also had to be trained from scratch.

For months the pilots flew day and night in everything from SNJ *Texans* to obsolete Brewster *Bucaneers*. Then Black Mac suffered what seemed a major setback. Twin-engine, two-seat planes – the kind he'd learned on and trained his pilots on – were out. The Navy wanted its night fighters solo, in single-engine planes that could take off from an aircraft carrier. Magruder maintained a 24-hour-a-day, seven-day-a-week training schedule. By January 1944, the majority of the pilots had checked out in F6Fs, and Black Mac and his fliers were learning to respect the stubby, little Grumman *Hellcat* which put the responsibility where it had to be: with the man flying it.

May 6, 1944. The squadron's entire complement – 37 Marine officers and

A Night Fighter's Diary



In the dark skies over Okinawa in 1945, Lt. Col. Marion M. Magruder led his night fighters to victory.

Photos courtesy of Col. M. M. Magruder

311 enlisted men, one Navy officer, eight Navy enlisted men, and one civilian technician – landed at Eniwetok in the Marshall Islands. Their mission was to defend the twice-raided atoll, then the most advanced U.S. base in the Pacific. But the air raids never came. The squadron spent a year and a day on the tiny, sun-seared coral islands without seeing a single enemy plane.

The Eniwetok exile was a heartbreaker for pilots and technicians trained and eager for combat. Black Mac's remedy was more training. He kept them working. They grumbled, they cursed the day they had laid eyes on a *Hellcat*, but they worked. The skipper gave them every night problem he could think of, including straight navigational hops to accustom their eyes to the Pacific darkness. He exploded the theory that night fliers should avoid all lights before takeoff and protect their eyes with red goggles. He told them, "If you know how to use your eyes, they will be dark adapted by the time you get upstairs."

He taught his pilots never to look directly at an object when they spotted it, to keep their eyes moving so it wouldn't disappear. He made them "leave the cockpit" – and the instruments that are a night fighter's lifeline – and fly on nothing but the stars, watching to see a star "go out" as another plane's shadow moved across it, calculating "the enemy's" course by the blotting out of the stars and the motion of their own planes.

Without any enemy, they practiced on one another: flying mock chases, staging mock attacks. Black Mac used every maneuver he thought enemy planes were capable of – and some he knew they weren't. These exercises reinforced what the squadron had learned at Cherry Point: night air defense is a team effort, between the ground controller who detects and locates an approaching enemy aircraft – a bogey – and the lone pilot who tracks it through the night, his course directed by the controller until he comes close enough to use his own radar, and then close enough to shoot.

There was gunnery practice. The night flier must aim to get his target on the first shot. If he doesn't, he is a sitting duck for a bomber's tail gunner. After months of practice shooting at Eniwetok, VMF(N)-533's pilots were quick, steady, accurate, and confident.

May 5, 1945. The pilots' tour was over and they were scheduled to return to the States. But nobody went home and nobody wanted to. VMF(N)-533 received orders to defend Okinawa, to pack up and leave in 36 hours. To Magruder, "It was a shot in the arm. Flight surgeons wanted to ground the boys after all those months. They said the strain had been too much. But I talked them out of it."

May 7. Led by Lieutenant Colonel Magruder, 15 pilots in 15 *Hellcats*, accompanied by six planes carrying a skeleton ground crew, took off from Eniwetok. In all, 28 officers and 57 men embarked on the longest over-

water flight yet made by single-seat, single-engine planes: 2,500 miles, with stops at Saipan and Iwo Jima.

May 10. VMF(N)-533 landed at Yontan Field, Okinawa, pitched tents before nightfall, and accepted an invitation to chow from VMF(N)-542, with which it would alternate patrols.

May 12. After two days of plane and radar gear inspection, six planes, Magruder leading, were ready to take off for the first night combat patrol. As they taxied to the end of the runway, Japanese suicide planes attacked fleet units anchored near Yontan. For a few minutes the sky was full of anti-aircraft fire. Then the patrol went up, feeling for the first time that the war was close.

The other half of the night defense team was settled underground, in care-

In the plane named for his five-year-old son, Lt. Col. Magruder scored his first hit. When word of the skipper's victory came over the radio, the whole squadron cheered.



fully concealed radar rooms, directing the pilots and keeping in constant touch. Many of the controllers had worked with the pilots since Cherry Point. They knew their fliers – knew which ones didn't like to be left alone a minute up there, which ones preferred to be called only at regular intervals. They knew who was best at navigating and using radar, who could be yelled at, and who had to be handled gently. The controllers stayed with their pilots through the night. If they had no reports or directions, they just talked – hashed over old football games, gave baseball scores. Some controllers read to their pilots; some even recited poetry – anything to let the pilot know someone was with him. Except for the conversations, the first night was quiet.

May 15. The squadron got its first victory when First Lieutenant Robert M. Wilhide destroyed a twin-engine bomber. On the same patrol, First Lieutenant Alfred F. Branham damaged and probably destroyed another plane. The pilots were getting used to flying in the biting cold of high altitudes; they were learning to test-fire when they made a fast climb for a 20,000-foot interception – to keep their guns from freezing.

May 17. Under ground control, 1st Lt. Wilhide chased two bombers. Warned that he was heading into friendly anti-aircraft fire, he did not turn off. He was not heard from again. A later search by four planes located debris and a pilot's dye marker. Wilhide was believed to have been killed by fire from a U.S. naval picket ship.

May 18. VMF(N)-533's combat score rose to seven when First Lieutenant Robert E. Wellwood downed three bombers and First Lieutenant Edward N. LeFaivre, on the same patrol, hit two more planes.

May 24. It was a night the squadron would not forget. It included five victories, three for First Lieutenant Albert F. Dellamano. But at Yontan Field, the rest of VMF(N)-533 was under attack. Japanese planes were trying to land. Four were shot down or crashed, one shearing an anti-aircraft mount and killing two Marines.

"It was one hell of a night," Col. Magruder remembers. He and three of his pilots were out on patrol. Suddenly all his instrument lights went out and he lost radio contact with ground control. He couldn't transmit a signal. He

knew that ground control would identify him as an enemy attacker and vector his own pilots to intercept him. He had two choices: to eject into the blackness, not knowing whether he would drop on land or into the ocean; or to return to base and, not being able to identify himself by radio, risk being shot down by anti-aircraft fire. He didn't hesitate for a moment: "I hate the ocean and its treacherous water."

There were no lights on the field but Magruder knew he could find a runway. He made a high-speed dive through a blanket of tracer fire. As he made his final turn for landing, the field's lights came on; as he lowered his wheels, the firing stopped.

While he tried to determine the cause of his plane's electrical failure, a red alert (signaling attack) sounded. An enemy bomber had come in behind Magruder, on the same runway, so close that ground radar was unable to pick it up. Scrambling out of his flight gear and grabbing his helmet, Magruder ordered his men to defend themselves in their foxholes.

The enemy plane had belly-landed about 250 feet from the tower, where First Lieutenant Maynard C. Kelley stood duty watch. The radio jeep was parked at the foot of the tower. 1st Lt. Kelley and the driver started for the bomber but were stopped by explosions. Japanese soldiers were setting demolition charges, destroying aircraft parked around the field. Kelley ran back to the tower and climbed up to focus the spotlight on the enemy. He was shot almost as soon as he got the light on; he died several hours later.

Magruder was checking on his men. As he approached one foxhole, the moon came up. "I could see the fear in the eyes of the man crouched in the corner. He had his M-1 rifle pointed directly at me. I knew by his expression he was going to shoot. Just by instinct and the grace of God, I lunged to the right as he fired pointblank in my face. Powder burned my eyes and I couldn't see anything. I actually thought I was dead but I didn't see any devils or angels."

Above, seated in Mac, Jr.'s Learjet, Black Mac recently stated, "It's a nice little airplane, just like a nice little fighter." Right, the Japanese Sally bomber that crash landed on Yontan Field, Okinawa, on May 24, 1945.

"I was sure the man had recognized me at the last second, but too late. Uncontrolled fear is a devastating thing."

Magruder ordered the terrified man out of the foxhole. "He came forward and I said to him, 'Among other things, you don't deserve to be a Marine – you can't shoot straight from three feet.' He responded, 'Sir, I am glad I couldn't.' I said, 'Hell, so am I.'"

The bullet had grazed Magruder's left cheek and gone through the side of his helmet. He saved the helmet to take home to his young sons.

May 31. The rest of the ground echelon arrived from Eniwetok – to rain and colossal mud. Detailed to nearby Le Shima to set up a new airstrip, the men pitched tents and solved the cooking problem with K and C rations.

At Yontan Field, ice cream was on the menu. Black Mac had found that his pilots needed fresh food. He scoffed at the belief that eating carrots improved night vision. They were no better than any other vegetable, he said. The best thing for his night fighters was ice cream. "It sits easily on the stomach." He kept ice cream



Bob Stewart



available.

June 2. Despite atrocious May weather – 13.93 inches of rain, 100-percent cloud cover 59 percent of the time – the squadron had downed 15 enemy planes. Morale surged higher when back mail arrived. Everyone had a month's correspondence to read.

June 8. After 12 nights marked only by unsuccessful pursuit of enemy hecklers, First Lieutenant Jay A. Stokes destroyed the first enemy plane of the month. Besides getting to know the enemy's maneuvers, the squadron was learning the tricks that the night skies of the Ryukyu Islands could play.

At high altitude a pilot would suddenly see blue fire dance on his wing tips, streak along the wings to join in a phosphorescent arch over his cockpit canopy, leap to the propeller, turn the

whirling blades into a disc of flame, then vanish. St. Elmo's fire.

On one late patrol, First Lieutenant Robert S. Hemstad was certain someone was flying wing on him. He was 70 or 80 miles from base, at high altitude, not quite sure of his bearing. A dark object seemed to be racing along with him, a little below and behind. He kept hearing more engine roar than one plane would account for. He flew for an hour, convinced that an enemy fighter was on his tail, playing with him, ready to fire any second. Later he figured it was just a combination of his imagination and a fleeting glimpse of a black island in the dark sea far below.

June 14. VMF(N)-533's record stood at 18. Among congratulations in a letter of commendation to the squadron was a message from the Third Fleet commander: "Let me add

my well done. Your victorious slugging is a source of pride to all hands. – Halsey"

June 15. The fliers were reunited with the ground echelon at the new camp and airstrip on Le Shima. It was a good homecoming for the officers and men who had been living as guests at Yontan for a month.

June 21. Captain Robert Baird became the first night fighter ace in the Marine Corps, downing two planes, for a total of five. His achievement raised the squadron's score to 26.

June 22. With the base on red alert, almost all the night shift was gathered in the operations dugout, around the short-wave radio. When word came over that Lt. Col. Magruder had destroyed a bomber, a cheer went up. It was the skipper's first victory. He was flying his "Little Mac," the plane named for his five-year-old son.

June 29. The squadron's total was 29. First Lieutenant Charles S. Stitt made it 30 – all radar interceptions, for which the ground controllers shared credit. Captain John F. Wilson, an architect from New Orleans and a controller with VMF(N)-533 since Cherry Point, was responsible for 11 of the interceptions, also setting an all-time record.

June 30. The 17 pilots who had been overseas for 15 months were grounded, awaiting relief. Each of the pilots but two had downed at least one enemy plane. "And those two were just unlucky," Black Mac said.

Epilogue: Lt. Col. Magruder and his pilots returned to the states in August 1945. "For extraordinary achievement in aerial combat," the night fighters of VMF(N)-533 received the Presidential Unit Citation. "For exceptionally meritorious conduct" as their commanding officer, Lt. Col. Marion M. Magruder was awarded the Presidential Citation, Legion of Merit.

Black Mac was made a full colonel in 1951. In 1961, after holding command and staff posts in the U.S., Germany, Japan, and Hawaii, he retired.

Marine Night Fighter Squadron 533 is now Marine All-Weather Attack Squadron, deployed in recent years in the western Pacific and the Mediterranean. But the number is still 533 and it always will be. "They can't get rid of this squadron because of the presidential citation," Col. Magruder says now. "We're in all the history books." ■



Ready to go on patrol, members of VMF(N)-533 are briefed by their skipper, Black Mac.



Some VMF(N)-533 night fighters pose with a squadron F6F Hellcat.

Awards

NAS Pensacola, Fla. (NASP) has been awarded the **Commander in Chief's Installation Excellence Award** for FY 89 for the second consecutive year. All Navy flight personnel receive their initial training at NASP. It serves as home for 56 tenant commands, including Aviation Officer Candidate School, Aircrewman Candidate School, three flight training squadrons, the *Blue Angels* flight demonstration squadron, and the training aircraft carrier *Lexington* (AVT-16).

The **Noel Davis Trophy** winners for 1989 are: HS-75, HelWingRes; VAQ-209, CVWR-20; VF-202, CVWR-20; VFA-303, CVWR-30; VP-90, ResPat-WingPac; and VR-50, FleLogSupp-Wing.

The **1989 Sheldon Clark Trophy** was awarded to Commander, Helicopter Wing Reserve, NAS North Island, Calif. This award is presented annually to the reserve functional wing most effective in the management of its assigned squadrons.

The **1989 CNATra individual training achievement award** winners are:

David S. Ingalls top flight instructor; LCdr. Luther H. Ridenhour, VT-7, NAS Meridian, Miss.

George M. Skurla top NFO instructor; Lt. Earl R. Bowen, NATU Mather AFB, Calif.

Orville Wright Achievement, highest overall grades: Ltjg. Hugh M. Flanagan, VFA-125, NAS Lemoore, Calif.

Texas Society, Daughters of the American Revolution award for the Navy, Marine Corps, and Coast Guard student pilots with the best performance in overall flight grades: Ens. Andrew Miles, USN; 1st Lt. Michael T. Keane, USMCR; and Ltjg. Robert R. Waters, USCGR.

National Society, Daughters of the American Colonists award for the highest overall academic and flight grade performance for the year: Ens. Sean P. Murray.

RAdm. Thurston H. James Memorial Award, outstanding NFO

graduate of the year: Ens. Kevin L. Wing.

Britannia Award, established by the Lord Commissioners of the Admiralty of the United Kingdom in appreciation of the assistance by the U.S. Navy in training British naval pilots: 1st Lt. Timothy M. Curry.

NAS Atlanta received the **Conway Trophy** as the top Naval Air Reserve command. The trophy is named in honor of Lt. Edwin F. Conway, who was killed in an airplane crash in 1933 while serving as commanding officer of Reserve Aviation Base, Floyd Bennett Field, N.Y.

HSL-94 won the **Admiral Alfred M. Pride ASW Award** for 1989 as the best LAMPS MK I squadron in the Naval Reserve. Sponsored by Kaman Aerospace Corporation and the Naval Reserve Association, this award is presented annually to the reserve LAMPS squadron with the highest mission readiness.

AMS2 Kenny K. Taylor, VXE-6, received the **Maintenance Petty Officer of the Year Award** from the Naval Helicopter Association. The aviation structural mechanic (structures) was cited for superior performance of his duties as helicopter division supervisor during 1989.

The **1989 Battles Es**, awarded for combat readiness, efficiency, and excellence, were presented:

ComNavAirLant: HC-8, HS-17, HSLs 32 and 44, VAs 37 and 176, VAQ-137, VAW-127, VC-10, VF-41, VFA-82, VP-26, VQ-4, and VS-24.

ComNavAirPac: HC-11, HM-15, HS-14, HSLs 35 and 45, VAs 94 and 185, VAQ-136, VAW-117, VC-1, VF-1, VFA-192, VP-50, VQ-3, and VS-29.

Records

Several units marked **safe flying time**.

HS-5: 30,000 hours and 10 years

HS-6: 1 year

HS-8: 30,103 hours and 9 years

HSL-43: 50,000 hours

HT-18: 450,000 hours and 9 years

MCAS Futenma: 29,000 hours and 18 years

NAS Alameda: 21,300 hours and 14 years

NAS Fallon: 12,000 hours and 10 years

TraWing-5: 300,000 hours

VA-36: 3 years

VA-55: 20,748 hours and 6 years

VAQ-34: 21,728 hours and 7 years

VAQ-131: 4,800 hours and 3 years

VAQ-138: 13,198 hours and 8 years

VAQ-309: 11,455 hours and 11 years

VAW-113: 23,000 hours and 11 years

VAW-127: 6 years

VF-24: 30,000 hours

VFA-87: 6 years

VFA-113: 70,000 hours and 16 years

VFA-147: 30,000 hours and 8 years

VMA-513: 30,000 hours and 7 years

VMGR-452: 3,000 hours and 2 years

VP-MAU Brunswick: 13,700 hours and 6 years

VP-10: 113,000 hours and 17 years

VP-26: 217,000 hours and 27 years

VP-40: 158,000 hours and 23 years

VP-47: 110,700 hours and 17 years

VP-49: 192,700 hours and 28 years

VP-50: 12,000 hours and 2 years

VP-62: 47,751 hours and 12 years

VP-93: 31,167 hours and 9 years

VS-31: 76,000 hours and 19 years

VS-38: 12,880 hours and 3 years

VS-41: 97,780 hours and 10 years

VT-2: 135,000 hours and 2 years and

VT-86: 126,000 hours and 13 years.

Cdr. Brad Gregor, skipper of VAW-113, completed his 4,000th flight hour in the E-2 *Hawkeye*.

Radar Intercept Officer **LCdr. Phil Nelson** of VF-24 recently surpassed his 3,000th flight-hour milestone in the F-14 *Tomcat*.

Andy Ingram of VA-72 passed 3,000 hours in the A-7 *Corsair II* while on maneuvers in the Caribbean.

Cdr. John Schork, C.O. of VA-95, logged his 1,000th trap in an A-6E *Intruder* aboard *Enterprise* (CVN-65).

VFA-87's C.O., **Cdr. Orren Crouch**, recorded his 1,000th trap on *Theodore Roosevelt* (CVN-71).

Cdr. Dave Architzel, skipper of VS-30, completed 4,000 hours in the S-3 *Viking*.

LCdr. Randy Causey of VFA-136 set a major milestone on April 10, 1990, by logging the 1,000,000th flight hour for the F/A-18 *Hornet*. The squadron is embarked on *Eisenhower* (CVN-69).



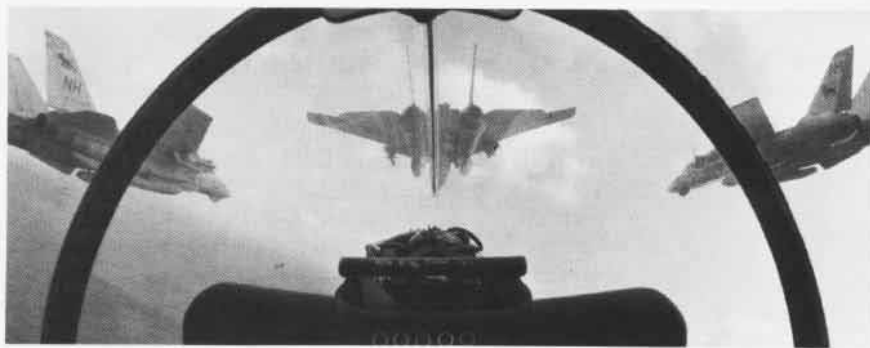
Gunstar 302 of the VFA-136 "Knight-hawks" lands onboard *Eisenhower*.

Rescues

The crew of an SH-2F helo from **HSL-33** rescued the pilot and passenger of a downed civilian airplane in the mountains of Arizona. The helo was en route to Davis-Monthan AFB, Ariz., from its home base at NAS North Island, Calif. After a refueling stop at MCAS Yuma, the crew was requested by Yuma approach control to assist in the search for the lost aircraft. "Seasnake 20" was vectored to the plane's last location approximately 60 miles northeast of Yuma. The crew soon spotted the plane's position lights. An initial pass overhead revealed the downed aircraft to be upside down. After determining that the pilot and passenger were in good condition, the crew ferried the survivors to MCAS Yuma where they were cared for by station medical personnel.

Constellation (CV-64) rescued two civilians at sea 480 miles southeast of San Diego, Calif. The men had been adrift for three days in their 32-foot sailboat due to damage to its main sail and a fuel leak in its engine. After a relayed message from the Coast Guard, the carrier launched an embarked SH-3 helo from **HS-75**, a reserve squadron based at NAS Jacksonville, Fla. Both men were flown aboard the ship and found to be in good health by medical personnel.

Honing the Edge



Take a number! Four F-14As in a diamond formation overfly *Enterprise* (CVN-65). VF-114 and 213 aircraft participated in the shot, which was taken from the back seat of the slot Tomcat.

AT2(AW) Paul V. Gosnell, NAS Cecil Field, Fla., an instructor in the F/A-18/A-7 electronic warfare (EW) officer's course, took the plight of Jacksonville, Florida's inner-city youth seriously and initiated a Navy Involved in Kids' Education (NIKE) Program. After working with the Duvall County School Board, Gosnell targeted for NIKE the John Love Elementary School, an inner-city school with typical problems.

He motivated members of his command to act as teaching assistants who would conduct class presentations, address school assemblies, and act as group or individual counselors. The program also involved visits to the F/A-18/A-7 EW school. Gosnell said the sight of the aircraft on the field gave the students a firsthand look at Naval Aviation and the advantages of a naval career.

Scan Pattern

A VP-1 P2V-2 *Neptune* and all hands onboard disappeared over British Columbia's mountainous terrain on November 4, 1948, during strike mission training. The plane was based in Vancouver, B.C.

Squadron X.O. **LCdr. Wilbur W. Titsworth**, the pilot of the ill-fated aircraft, last radioed the squadron commander that his left wing heater was not working and that he was descending to avoid icing conditions. Search and rescue efforts began immediately. After nearly 1,000 flying hours, involving more than 150 aircraft, the crew

was considered lost.

A geologist discovered the wreckage site in November 1961. The remains were buried and a brass plaque bearing the names of the crew was set in concrete at the crash site. A Navy recovery team returned to the scene in September 1989. The remains were exhumed and reburied with full military honors at Arlington National Cemetery.



PH1 Bob Bentley

A Marine CH-53E helo from MCAS Tucson, Calif., lifts a 31,000-lb. remotely piloted QF-4B drone from the PMTC sea test range at Point Mugu, Calif., following a missile test. **HMH-466** is the only squadron in southern California capable of lifting a load of this size.

First Lady Barbara Bush will give the Navy's newest *Nimitz*-class carrier, *George Washington* (CVN-73), a personal sendoff when she breaks the ceremonial bottle of wine over the bow at the ship's christening on July 21, 1990. *Washington* will be 1,092 feet long with a displacement of 95,000 tons. Her keel was laid in August 1986 and she is scheduled for delivery in 1992 at a cost of nearly \$3 billion.



The enforcement of laws to keep illegal drugs out of the U.S. and to curb the activities of drug dealers in this country is a growing concern. NADEP Alameda, Calif., recently joined the U.S. Customs Service in its endeavors to safeguard the nation. Three special P-3As from Customs were reworked in the NADEP's Standard Depot Level Maintenance program. After completion, the aircraft will continue their mission — the surveillance and interdiction of drug trafficking.

In photo above, LCdr. Karl Yeakel, P-3 Project Officer, presents the logbook of the first aircraft (in background) to Peter Kendig, Deputy Director, Surveillance Support Center, NAS Corpus Christi, Texas. NADEP personnel looking on (left to right): Plane Captain Gary Jensen, Flight Engineer AMCS Larry Weston, Product Support Director LCdr. Bob Fonnesbeck, and AD3 Fritz Petersen.

Change of Command

CVW-8: Capt. William J. Fallon relieved Capt. John F. Manning, Jr.
HMM-163: Lt. Col. Jeffery L. Lott relieved Lt. Col. T. A. Caughlan.
HS-8: Cdr. Don Steuer relieved Cdr. Dave Howard.

HSL-41: Cdr. George Galdorisi relieved Cdr. Robert Chaplain.

HSL-45: Cdr. Gregory Differding relieved Cdr. Keith Mulder.

LATWing-1: Capt. John W. Curtin relieved Capt. Dean M. Hendrickson.

NAF Atsugi: Capt. William A. Roop relieved Capt. John P. Brockley.

NAR Alameda: Capt. Larry L. Duncan relieved Capt. Larry R. English.

NASC: Capt. Robert V. Goodloe relieved Capt. James W. Dickson.

NavSpaceCom: Col. Charles Ray Geiger relieved RAdm. David Eugene Frost.

NR NAS 0174: Cdr. Kendall G. Durkee relieved Cdr. Timothy J. O'Laughlin.

PatWing-10: Capt. Donald C. Hefkin relieved Capt. John R. Ryan.

Tripoli: Capt. G. Bruce McEwen relieved Capt. Eric L. Peterson.

VA-36: Cdr. T. Ladson Webb, Jr., relieved Cdr. D. J. Franken.

VA-65: Cdr. Ralph H. Coon relieved Cdr. Michael C. Vogt.

VA-94: Cdr. Lewis G. Mason relieved Cdr. John A. Roe.

VA-145: Cdr. H. Denby Starling II relieved Cdr. Russell T. Palsgrove.

VA-0689: Cdr. J. A. Staiger relieved Cdr. D. W. Ahrens.

VAQ-134: Cdr. James W. Rowley relieved Cdr. Harry P. Brown, Jr.

VAW-117: Cdr. Ronald A. Wiley relieved Cdr. Joel M. Edmondson.

VF-43: Cdr. Richard E. Davis relieved Cdr. Robert D. Berger.

VF-114: Cdr. J. R. Davis relieved Cdr. R. L. Casey.

VF-124: Cdr. Michael J. McCabe relieved Capt. Richard J. Bradley.

VF-301: Cdr. Steven A. Murray relieved Cdr. David G. Stillings.

VMA-211: Lt. Col. George G. Goodwin relieved Lt. Col. Daniel L. Hughes.

VP-6: Cdr. Jeffrey M. O'Brien relieved Cdr. David J. Nelson.

VP-26: Cdr. Kenneth W. Peters relieved Cdr. Edward C. Wallace.

VP-49: Cdr. Robert P. Coonan relieved Cdr. Charles R. Sipe, Jr.

VP-67: Cdr. David L. Caswell relieved Cdr. Herbert W. Foote III.

VP-68: Cdr. Daniel Puzon relieved Cdr. Gregory Hinchliffe.

VP-0919: Cdr. Wayne S. Stanfield relieved Cdr. Paul F. Blunt.

VS-24: Cdr. Michael H. Miller relieved Cdr. J. B. Renninger.

VT-4: Cdr. Daniel J. Rowe relieved Cdr. Steven A. Brown.

NA News and Naval Aviation History Bid Farewell to John Elliott

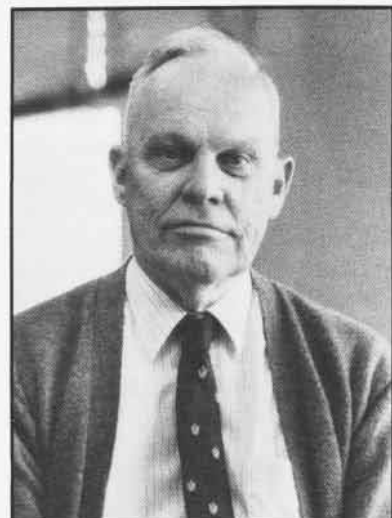
Most people look forward to retirement — the fulfillment of a lifetime of work. Some people look forward to a second retirement. Such is the case of John M. Elliott, assistant historian in the Naval Aviation History Branch, Naval Historical Center. He will retire from civilian service on June 29, 1990, with 47 years of federal employment, including a 24-year career in the Marine Corps. (See *NA News*, July-August 1989.)

John's associates, personal and professional, believe that John and aviation are synonymous. If there is a question concerning aircraft in WW I or later, John usually has the answer.

He is a treasure chest of aviation historical information.

After hours, he works on Volume IV of a four-book series on the painting and markings of U.S. Navy and Marine Corps aircraft from 1911 to date. His expertise in the field of airplane markings is known worldwide.

Although John will not be here on a daily basis, he does intend to contribute to several projects on a voluntary basis. It is with both sadness and fond wishes that we bid farewell to a favorite coworker and a good friend. We'll miss the fascinating sea stories and wealth of historical trivia from our "resident Marine." *Semper Fi*, John.



JO1 Jim Richeson

PROFESSIONAL READING

By Cdr. Peter Mersky, USNR-R

Elliott, John M., Maj. USMC(Ret.). *The Official Monogram U.S. Navy & Marine Corps Aircraft Color Guide, Vol. 2, 1940-1949*. Monogram Aviation Publications, Sturbridge, MA 01566. 1989. 194 pp. Illustrated. \$42.95.

John Elliott continues his in-depth, four-volume coverage of this multifaceted subject. Similar in format and size to the first book, Vol. 2 discusses the decade of the forties, including the years immediately before the U.S. entry into WW II, and the major marking and color changes the war brought. The postwar years saw the resurgence of distinctive schemes and insignia.

Most of the book's color and black-and-white photos are new. Most Navy and Marine Corps types are shown, including esoteric aircraft, such as the TDR-1 target assault drone, which saw limited operational service in the Pacific in 1944. A view of a Consolidated-Vultee OY spotter plane shows the

mud-splattered little two-seater in Army camouflage and Navy markings. There are striking color photos of F4Fs and SBCs with orange war-game crosses immediately before Pearl Harbor, as well as a rare shot of a Vought OS2U in Marine markings. Aircraft color schemes, the evolution of wartime national insignia, and theater-related variations are discussed in depth.

Special mention should be made of the striking renderings of selected aircraft, showing them in typical poses on the ground and airborne. The view of the diving SBD, with its intricate dive flaps and bomb displacing gear, is particularly well done and shows the incredible amount of research in the entire book.

Like the first volume, this second book definitely belongs in any aeronautical enthusiast's library as well as that of the serious wartime researcher.

WEATHER FRONT

Heat Stress

There is considerable truth in the old adage: "It's not the heat, it's the humidity!" Personnel efficiency and safety during the sweaty "dog days" of



summer are directly affected by the level of humidity. The combination of excessive heat and humidity are recognized health hazards. Previously, it was the older age groups who were the most likely to succumb to extreme summer conditions. In this day of physical fitness, however, many younger people are becoming statistics as the human body is taxed beyond its abilities.

During a recent interview with a reporter, Thomas Adams, Ph.D., professor of physiology at Michigan State University, stated: "Surprisingly enough, about 2,000 young, healthy adults die every year from exercise-induced heat stroke." Dr. Adams noted that some military personnel are in-

By Capt. Neil F. O'Connor, USN(Ret.)

cluded in the numbers. For proper perspective, just recall the sweat worked up the last time you walked out to the flight line in full gear on a hot, sticky, windless summer afternoon. As indicated in the table, when the air temperature reaches 90 degrees F, and the relative humidity is 90 percent, the apparent temperature is equivalent to 122 degrees F.

HEAT INDEX TABLE										
Air temp (°F)	Relative humidity (percentage)									
	60	65	70	75	80	85	90	95	100	
100	132	138	144							
95	114	119	124	130	136					
90	100	102	106	109	113	117	122			
85	90	91	93	95	97	99	102	105	108	

Hot weather sickness occurs when the body's mechanism for cooling is overtaxed – usually from the loss of water. The body uses sweating as a means of maintaining a stable temperature, but on those days when the humidity is very high, perspiring is frequently ineffective. Early symptoms of heat exposure include irritability, pounding pulse, headaches, feeling hot, listless, and generally uncomfortable. If any of these symptoms occur, stop the activity, retreat to the shade

with a cool, nonalcoholic liquid, and consider cutting back on the level of activity. An individual experiencing nausea, dizziness, cramps, or a breathing problem should seek immediate medical assistance.

Supervisors need to be particularly aware of the influence of heat and humidity on personnel working on the flight line/deck! Attention is more critical at shore activities, but even at sea precautions against heat stress need to be considered. During lulls in flight ops – particularly during carquals when there are significant lengthy periods of steaming upwind, which results in a no-wind condition across the flight deck – temperature and humidity may reach uncomfortable levels for deck personnel. A word to the wise: when the heat is on, drink plenty of water, and eat extra fruits and vegetables.



Aviation Officer Survey

The Navy Occupational Development and Analysis Center (NODAC) recently completed interviews of over 500 fleet aviation officers and developed a comprehensive Aviation Community Officers' Task Inventory survey booklet. The booklet will be mailed out this summer as part of the Navy Occupational Task Analysis Program (NOTAP), which is designed to provide an objective description of work performed by Navy enlisted and officer personnel. Officer NOTAP is the pioneer step in developing precise, objective definitions of primary skill fields of naval officers. The analysis of data collected through observations, interviews, and fleet surveys is provided to manpower, personnel, and training managers for consideration in areas such as curriculum review, classification, and officer assignments.

If you receive the survey, carefully complete and promptly return the booklet. The time you invest will provide enormous dividends for tomorrow's Navy. Your input is the most important aspect of this program — it will make a difference.

For more information, call Lt. Fox (NODAC-102) at autovon 288-4576/7 or (202) 433-4576/7.

Squadron Command

As a junior Naval Flight Officer, I applaud VAdm. Dunleavy's drive to ensure Naval Aviation will have "vigorous leadership" with "more time to groom that leadership for major command, joint command and flag selection," as stated in the Flight Line department of your March-April 1990 issue. To accomplish this, there is a push to bring the age of our squadron C.O.'s down to 36-38 years old. Command is indeed the "plum" for which all junior officers strive, and we are told "performance is the key."

Though a minority, there are Naval Aviators and Naval Flight Officers who, for a number of reasons including prior enlisted service and late entry into AOCs, will not be in the window for squadron command at age 36-38. Targeting an age at the expense of

performance is at the very least demoralizing for the oldsters and a probable deprivation to the Navy of quality leaders. While it may be nice to have all admirals with their hair still its original color, the key to a successful organization — especially a fighting one — is to ensure that the best are chosen to lead because they are the best, as proven by their performance.

Lt. John Covell
5384 Dalrymple St.
Virginia Beach, VA 23464

Rest assured that performance is still the key to promotion and command. The age factor is a side issue of our efforts to get the best person in the best job for both the aviator and the Navy. Keep in mind we're looking at the typical aviator who goes from college directly into the Navy. Starting later or having enlisted time will not be a detractor to promotion or selection to command.

The leadership of Naval Aviation must continually look at the type of jobs we send our aviators to. Is the "squadron-TraCom/FRS-squadron-FRS-squadron" career path the best for the future of Naval Aviation? We're looking at that now, but intuitively I don't think so. We need to increase the number of aviators in technical curricula at Monterey so we can have competent fleet-experienced aviators in NavAir making the right decisions in the design of our aircraft.

We need to send some of our front-runners to joint schools and billets to ensure that Naval Aviation is appropriately employed in future joint operations. We also need to send good people to critical jobs in D.C. so they can develop a good experience base in financial, manpower, and legislative programs.

While doing all this, we have to keep tactical proficiency in the center of the scope. The bottom line is still: bombs on target, missiles up tailpipes, and torpedoes on submarines. It all sounds like a lot, but I think we can do better.

VAdm. Dick Dunleavy
ACNO (Air Warfare)

Double Oops

Thank you for printing my letter under "Oops" in your March-April 1990 issue about the ship's photo caption which appeared in the preceding issue. I commented that the photo was of *Luce* (DDG-38) vice *Curtis* (FFG-38). Imagine my surprise when I received a well-documented letter

from OSC(SW) Jeffrey Munn, FACSAC Pensacola, pointing out that the ship is actually a foreign vessel, HMAS *Perth* (D-38) of the Australian navy!

I'm going below to polish my tarnished "black shoes."

Capt. Richard T. Sloan
C.O., Service School Command
NTC Orlando, FL 32812-5800

Red Rescue Arrows

Regarding "Out of the Archives...", March-April 1990, if my memory serves me right, the red rescue arrows on aircraft were changed to yellow: to standardize the markings for international operations, and for night ops because red is hard to distinguish.

ABCS R. G. Austin, USN(Ret.)
307-1/2 W. 3rd Ave., Apt. 2
Red Wing, MN 55066

Ed's note: Thank you for the recollection. Any other readers know why rescue arrows were changed to yellow?

Physical Fitness

I am writing in regard to the article, "Fit to Fly," *NANews*, March-April 1987. It discussed the results of a study conducted at the Naval Aerospace Medical Research Laboratory (NAMRL), Pensacola, Fla., in which experienced F/A-18 pilots participated. This was a specific strength and muscular endurance conditioning program designed to enhance G-tolerance. The preliminary results suggested a direct relationship between G-tolerance and anaerobic conditioning (71% improvement for weight lifting groups vs. 6% for control group). The interrelationship of many other variables including diet, hydration, anaerobic and aerobic condition, initial G-tolerance, centrifuge training response, and flight experience all contribute to the pilots' ability to perform in a high-G environment, and make it impossible to draw final conclusions which show a specific effect of conditioning on G-tolerance. NAMRL is continuing to examine the above-mentioned variables and their relationship to G-tolerance.

Lt. D. M. Murdoch
ComFAirMed Aeromedical Safety Unit
FPO New York, NY 09540

VR-21

My father is a former member of VR-21, Det Alameda, and VR-30 which flew C-1s during the sixties. I believe these squadrons flew COD aboard *Saratoga*, *Hornet* and perhaps *Franklin D. Roosevelt*. I would like to contact former officers and aircrew, including Capt. Klag of *Saratoga*.

James Thomas Reynolds
3423 College Dr., Apt. E3
Columbus, GA 31907

Aircraft Escape Systems

I am compiling a history on the development of the world air forces' assisted escape systems, 1900 to present. Would appreciate experiences, trial/test information, manuals, photos, etc.

Mike Bennett
57, Cheviot
Wilnecote, Tamworth
Staffordshire B77 4JP, England

Ghost Stories

The reaction to my book *Ghosts of the Air*, to be released in March 1991, was so positive that the publisher has put volume 2 under contract. Once again, I would like to hear from anyone who has ghostly tales of aircraft, aircrews, phenomena, and other mysteries. We lend credence and dignity to the subject. Privacy will be protected.

Martin Caidin
13416 University Station
Gainesville, FL 32604

Vietnam Helo Pilots

As membership chairman of the Vietnam Helicopter Pilots Association, I am trying to locate potential members. Our group consists of over 4,000 pilots from all services. If you're interested, please call (513) 721-VHPA or contact me.

Phil Marshall
7 W. Seventh St., Suite 1940
Cincinnati, OH 45202

Locator

I am pursuing a historical research project on the Navy/Marine Corps use of the Fairchild R4Q/C-119 *Packet*. I wish to locate ex-pilots and crew members of these aircraft from VR-24, various VMR outfits, and Navy and Marine reserve units from Seattle, Glenview, Minneapolis/Twin Cities, and Grosse Ile.

Nicholas M. Williams
American Aviation Historical Society
208 Pine Street
Waverly, IA 50677

Reunions, Conferences, etc.

Air Group 87 planned reunion. Former members who served aboard *Ticonderoga* during WW II contact Jerry Shearer, 3236 S. 180th Pl., Seattle, WA 98188, (206)248-2268.

VF's 141/53 reunion, JUL 90, Las Vegas, NV. POC: Harold Dolin, 9646 Hamilton Hills Dr., Indianapolis, IN 46250, (317)849-0218.

VAQ-133 reunion, 19 JUL, NAS Whidbey Island, WA. POC: Lt. Jon Boe, VAQ-133, FPO San Francisco, CA 96601, AV 820-4862/(206)257-4862.

EAA Fly-In Convention, 27 JUL-2 AUG, Wittman Regional Airport. POC: EAA OSHKOSH '90, EAA Aviation Center, Oshkosh, WI 54903-3086, (414)426-4800.

Ranger (CVA/CV-61) reunion, 3-5 AUG, Charleston, SC. POC: John Muzio, Box 49, Round Top, NY 12473.

Aviation Boatswain's Mates Assoc. Symposium, 7-10 AUG, Silverdale, WA. POC: D. Deese, (206)871-5963.

Philippine Sea (CV-47) reunion, 9-12 AUG, Charleston, SC. POC: USS Philippine Sea Assoc., Box 597, Levittown, PA 19057, (215)946-3836.

Intrepid (CV/CVA/CVS-11) reunion, 11 AUG, aboard *Intrepid*, New York City. POC: Fred Hemmerich, 144 Furler St., Totowa, NJ 07512.

Assoc. of Minemen reunion, 17-19 AUG, Yorktown, VA. POC: Box 71835, Charleston, SC 29415, or Cdr. Lyal Stryker, (803)797-0841.

Bon Homme Richard (CV/CVA-31) reunion, 17-19 AUG, Muskegon, MI. POC: Ralph Pound, Box 1531, Tupelo, MS 38802, (601)842-8247/0572.

VC-80 reunion, SEP 90, Denver, CO. POC: Bob Westbrook, 8131 Murray Hill Dr., Ft. Washington, MD 20744, (301)567-4726.

Independence (CVL-22) reunion, 4-8 SEP, New Orleans, LA. POC: Joe Rogers, 141 Locust Dr., Maywood, NY 07607, (201)845-6182.

Curtiss (AV-4) reunion, 5-9 SEP, Rochester, NY. POC: Harold Oliver, 1575 W. Valley Pkwy. #37, Escondido, CA 92025, (619)741-7831.

Forrestal (CVA-59) reunion, 6-9 SEP. POC: Bob Glickman, 6884 N.W. 30th Ave., Ft. Lauderdale, FL 33309, (305)972-5549.

Omaney Bay (CVE-79) reunion, 6-9 SEP, Baltimore, MD. POC: W. J. Dunne, 809 Murchison Dr., Millbrae, CA 94030, (415)697-7964.

Princeton (CVL-23) reunion, 12-16 SEP, St. Louis, MO. POC: Sam Minervini, 251 Marlboro Rd., Wood-Ridge, NJ 07075.

Wright (AZ-1/AV-1/CVL-49/CCL-2) reunion, 12-16 SEP, San Diego, CA. POC: M. L. Johnson, 1930-54 W. San Marcos Blvd., San Marcos, CA 92069, (619)727-3573.

PBY Catalina Intl. Assoc. reunion, 13-16 SEP, New Orleans, LA. POC: James Thompson, 1510 Kabel Dr., New Orleans, LA 70131, (504)392-1227.

VR-24 reunion, 13-16 SEP, Ventura, CA. POC: Pete Owen, 24633 Mulholland Hwy., Calabasas, CA 91302, (818)348-4056.

Nassau (CVE-16) reunion, 16-18 SEP, Las Vegas, NV. POC: Sam Moore, 10320 Calimesa Blvd. #221, Calimesa, CA 92320, (714)795-6070.

Silver Eagles reunion, 19-21 SEP, St. Augustine, FL. POC: F. M. O'Laughlin, 750 Winfred Dr. S., Orange Park, FL 32074, (904)264-3273.

Badoeng Strait (CVE-116) reunion, 23-26 SEP, Las Vegas, NV. POC: Henry Trotter, 106 Sage Dr., Universal City, TX 78148, (512)658-3447.

Norton Sound (AV-11/AVM-1) reunion, 26-30 SEP, Orlando, FL. POC: Robert Hovestadt, Box 487, Port Hueneme, CA 93044, (805)485-6144.

Card (CVE-11) reunion, 27-29 SEP, San Antonio, TX. POC: Joe Macchia, 8290 Melrose Rd., Melrose, FL 32666, (904)475-1279.

Langley (CVL-27) reunion, 28-30 SEP, Charleston, SC. POC: Nick Chagaris, 11 Bourn Ave., Hampton, NH 03842, (603)926-7545.

VC-94 reunion, OCT 90, San Antonio, TX. POC: Joe Trevino, 2002 W. Durango, San Antonio, TX 78207, (512)225-4459.

VP-24 reunion, OCT 90, Patuxent River, MD. POC: J. L. Burke, 106 Red Oak Rd., Lexington Park, MD 20653.

VS-1-D14/VS-51/VS-66 reunion, 4-6 OCT, San Antonio, TX. POC: J. H. Robinson, 5072 Polaris St., Jacksonville, FL 32205, (904)786-8853.

ASR/Utility Unit Corry Field (1944-56) reunion, 6 OCT, Pensacola, FL. POC: Craig Wonder, 1614 Bellair Blvd., Orange Park, FL 32073, (904)269-0785.

VF-31 reunion, 6 OCT, Va. Beach, VA. POC: Lt. Broc Bradley, VF-31, FPO New York, NY 09504-6106.

NAS Jacksonville reunion, 6-15 OCT. POC: Lt. Steve Puyau, Box 2, NAS Jacksonville, FL 32212, AV 942-2851/(904)772-2851.

Leyte (CV-32) reunion, 11-13 OCT, Scottsdale, AZ. POC: Clarkson Farnsworth, 615 Sanders Ave., Scotia, NY 12302, (518)346-5240.

Marine Corps. Aviation Assoc. Convention, 11-14 OCT, Norfolk, VA. POC: MCAA, Box 296, Quantico, VA 22134.

Boxer (CV/CVA/CVS-21/LPH-4) reunion, 11-14 OCT, Pensacola, FL. POC: Earl Duncan, 3039 Vincent Rd., North Street, MI 48049, (313)982-5437.

VPB-74 reunion, 17-20 OCT, Bryan, OH. POC: R. E. Schreder, Box 488, Bryan, OH 43506, (419)636-3184.

Saginaw Bay (CVE-82) reunion, 19-21 OCT, Charleston, SC. POC: Earl Homman, 4220 Old Mill Rd., Lancaster, OH 43130, (614)654-1651.

Suwannee (CVE-27) reunion, 25-27 OCT, Cleveland, OH. POC: Charles Zubyk, 305 E. Second St., Girard, OH 44420, (216)545-6716.

Hoggatt Bay (CVE-75) reunion, 25-28 OCT, Pensacola, FL. POC: D. L. Canady, 5868 Argyle Way, Riverside, CA 92506, (714)787-8666.

VP-45 reunion, 26-28 OCT, Pensacola, FL. POC: Jay Thomas, 7016 W. 12th, Wichita, KS 67212, (316)943-3304.

NAVAL AVIATION NEWS

July-August 1990



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